AD ASTRA...

"RICK" WD8MSJ "JACK" WD8BNG "LOU" WA8VWM "GENE" W8MVM

THE DAYTON HAMVENTION CREW

THE JOURNAL OF
THE ATARI MICROCOMPUTER NET
AMATEUR RADIO OPERATOR USERS' GROUP

AD ASTRA...

THE JOURNAL OF THE ATARI MICROCOMPUTER NETWORK

THE ATARI MICROCOMPUTER NET USERS' GROUP
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AD ASTRA... VOL. 2, # 3

The ATARI Microcomputer Net is a non-profit organization of amateur radio operators, short-wave listeners and ATARI Computer Enthusiasts who share a common interest- exchanging information on applications, programming and operation of the ATARI Microcomputer System. With these goals in mind, all persons are invited to join the net for the purpose of personal enlightenment and fraternalism. Amateur radio operators and short-wave listeners are especially encouraged to directly participate in the weekly on-the-air meetings.

"Ad Astra..." is the official journal of the ATARI Microcomputer Network and is made available to all registered members of the Net. "Ad Astra..." is an optional entity of the Net and there is no obligation to receive the journal. Members who wish to receive "Ad Astra..." are asked to help offset the cost of printing and postage by sending an annual donation of $10.00 to Net headquarters at the address shown at the top of this page.

"Ad Astra..." is published six times per year by the ATARI Microcomputer Network and all articles contained herein are submitted and published with no promise, implied or expressed, of monetary compensation. Neither the Net, it's officials, members or authors may be held responsible for the validity or accuracy of the articles contained within the pages of this journal.

EDITORIAL . . .

Ho Hum! Summer time, and the livin' is easy.... I have a case of the late-summer blahs! The Heathkit 4001 Weather Computer has just turned over to 100 degrees F (38 degrees C) and the air-conditioner is straining hard to overcome semi-brownout conditions. It's easy to understand my condition when you consider that I'm sitting at the ol' 800 LISTENING to the regional net.... not controlling, but listening. 40 meters is so crummy today that I can't even bring up the Midwest net! Little do they know, but I am listening to Joe, KA4NCG, and Ron, W4LDE, running the Southeast net and picking up many of our usual Midwest net check-ins! Thank heavens for the frequency overlap! At least the members were able to get together! Gee! They are doing a good job with the net! Perhaps for me it is fortunate that the band is lousy... you see, the blahs are not so much a matter of the heat and the band conditions as it is the beginning stages of burnout. The early warning signals of burnout have begun. It is time for a rest. The mail load has been tremendous and I do like to answer each and every question. The only problem is that the net membership is now almost 700 members and the mail is becoming oppressive! At an average of 4 new members to process and 7 letters with questions to answer each day, It takes me about 5 hours a day to properly administer the net. Before I go completely "bonkers", I would like everyone to consider investing a few dimes and call your questions in to me instead of writing. This will take a tremendous workload off of me and can postpone or eliminate "burnout"! We are also instituting a new office in the net's structure... that of HISTORIAN. The job of the historian is to provide photocopies of articles appearing in back issues "Ad Astra..." to members who may need this information. As you can well imagine, this could be rather expensive for the historian and we must set the post up as a self-supporting entity. Complete information on using the historian's office will be found under the "Member Services" section of "Ad Astra..."

Now we come to a subject that I hesitate to write about.... money! I hate to bring up that subject when everyone is having a good time! We have a need for about $250 to buy a Hayes Smartmodem for our BBS. A valiant effort was put forth by Joe, KA4NCG, to coerce Hayes into providing one for our BBS, but the response from them was silence. So, we must rely on our own resources. Intially, I thought that we should pull the funds needed for the modem from the "Ad Astra..." publishing fund. Unfortunately, this fund is pretty well tied down due to the narrow income vs. cost structure of the journal. If we took advertising, we could probably handle it, but we were 99.9% against advertising. Since I'm totally against using larceny for any type of gain, we must find another method. Ruleing our "borrowing" and "stealing" we now come to "begging"! This will probably be the most just manner of obtaining the needed modem since not all members would take

advantage of the service. We are proposing using the modem at the QTH of our librarian, John, KC5FW, John would put the computer on-line during overnight hours. Our 20 disk library would be rotated through the system and you would be able to access the library without having to send a diskette to John! As you can see, there could be some great advantages! We are going to ask that any of our members who have an interest in helping to implement our bulletin board service, please send a small donation to a special fund. If you send a donation, please be sure to mark the envelope's lower left corner with "BBS" and we'll know where to put the dough. I hope that we can get the library on-line within a month of the release of this issue of the journal, so quick response will be appreciated. Many thanks!

The new 600XLs are now hitting the streets and the response has been VERY favorable! It looks like ATARI's new XL series will be the smash that they hoped for! Only time will tell, of course and unless there is a new series of these stupid computer price wars, the company should do very well in the marketplace. Many of us will be awaiting the more advanced models but according to a recent article in "BYTE Magazine", there may indeed be a wait because of the present shortage of 64K dynamic RAM chips. There was no mention that ATARI was directly affected, but unless they have horded them, they will be in the same boat as a number of other manufacturers. Don't despair... the wait will be well worth it!

This is the part that I hate to write.... I come to all of you members to beg your forgiveness. Alas, I am late with this issue of the journal and a couple of fellows have asked me where their issues are. I should explain... Last year, when I began the expansion of "Ad Astra..." from it's original 16 pages I felt that it would be relatively easy to accomplish because of the fact that the business that I work in was proceeding at a VERY MODERATE pace. Indeed, it became so moderate that I was laid-off in August... the first time that I had been laid-off in a non-winter month! The recession really caught up with the construction business and as a manufacturer of steel buildings we were hit hard. It turned out that I was off for a total of 50 weeks (!!!) and you will recall that I was able to send out "Ad Astra..." promptly every two months. Since I had lots of time, I really didn't think about what our expansion would mean when I got back to work. And expand we did! At the time of my lay-off we had less than 200 members. When I was called-back we had almost 700! Believe me, I NOTICED the effects immediately! To top it off, my job has been keeping me at the plant 10 to 12 hours a day for 6 days a week! That's my explaination and I hope you will accept my apology. I will try to catch up with the next two issues with the hope that members who submit articles will do so in the same format as the journal so that I can do the paste-ups with minimal additional work. Here's a real corker... do we have a member who would like to become the editor/publisher of "Ad Astra..."???? If any of you are

CONTINUED ON PAGE 48

GOODIES FROM BOB HOLSTI, K7ZJD

Bob Holsti is making his popular RTTY program with upload-download capabilities available to the members of the net through the net library. This program gives you RTTY operation with some very sophisticated features. The TU required for this program can be any single-tone decoder that can be attached to the RS-232 port 1 on the 850 interface. If you would like to build your own, Bob has a number of PC boards for $5 each that use the XR-2206 and XR-2211 chips. You will have to build-up these unpopulated boards and align them yourself. If you want some completed modems, Bob has a small number of them for $50 each, wired and tested. Good for 170 Hz. shift only, Bob says that they are great for 2 meter operation.

Bob also has developed a new ASCII program for program swapping and it is also being made available through the net library! Similar in concept to the RTTY program, you can get together with a friend on the air and have a ball sending programs to each other! The program is menu driven and all you have to do is to hook a TU up to the 850's port # 1 and type RUN "D:HAM"... at that point you are ready to go! It could't be simpler! We will try to have a complete review of this program elsewhere in this issue of "Ad Astra...".

Bob also passes along the following information: The ATARI is not very fond of high SWR (nor is any communication equipment! ED) and you should be careful not to have all kinds of RF floating around lest you zap diskettes! Also, watch out for bad grounds in your equipment! 20,000 volts of static can not only torture a diskette, but can permanently alter or destroy memory and operating system chips!

Bob's phone number is (904) 651-1764, evenings. His address is: 113C Ash Drive, Eglin AFB, FL 32542

ATARI MICROCOMPUTER NETWORK
NET ORGANIZATION

Regional calling frequency: 7.235 Mhz (Call station or CQ ATARI)
National Net: 14.325 Mhz. at 1600Z, Sundays, NC/WD8BNG
Midwest Regional Net: 7.235 Mhz. at 1830Z, Sundays, NC/WD8BNG
Southeast Regional Net: 7.235 Mhz. at 1800Z, Sundays, NC/KD4DB
Southwest Regional Net: 7.230 Mhz. at 1800Z, Sundays, NC/KC5FW
Pacific NW Regional Net: 7.230 Mhz. at 1800Z, Sundays, NC/KC7DG
East Coast Regional Net: 3.960 Mhz. at 8 pm EST, Wednesdays, NC/N2CZW
West Coast Regional Net: 7.235 Mhz. at 11 am PST, Sundays, NC/WA6TUB
International Net: 21.400 Mhz. at 2330Z, Alternate Thursdays, NC/WD8BNG
Dayton, Ohio Local Net: Open channel daily on 146.445 Mhz., Simplex
Chicago, IL Local Net: Open channel daily on 147.570 Mhz., Simplex
Central Kentucky Local Net: 145.85 (TX 600Khz down) repeater, 8 pm EST, Wednesdays, NC/WD4HPL

Additional nets will be formed as regional/local net control stations volunteer their time. If you would like to start a regional/local net in your area, contact WD8BNG for a Net Coordinator's packet.

CLASSIFIEDS!

FOR SALE Epson MX-70 w/cable for the '850. Al Kruhm, K2BSM, 70-16 171st St., Flushing, NY 11365 (212) 969-8142

FOR SALE ATARI 410 Data Recorder in excellent condition. Ron Maret, WB8WSS, 6516 Wiehe Rd., Cincinnati, OH 45237

EXCHANGE PROGRAMS with other members of the net. Please send your list and I will do the same. Ron Maret, WB8WSS, 6516 Wiehe Rd., Cincinnati, OH 45237

MEMBER SERVICES

DISKETTES W/SLEEVES

We are now able to obtain diskettes with sleeves at a low price. Previously, the sleeves were an additional cost due to the bulk-style packaging of the disks. These disks could be one of several brands as we receive only what is available at the moment from the supplier. These brands have been Wabash, Memorex, Scotch and Verbatim in the past. Cost from Net HQ is $2.00 per diskette. Shipping is included in orders for 5 diskettes or more. If the order is for less than 5 diskettes, please enclose an extra $1.00 to cover the postage. The profit ($.40 less postage) goes into making "Ad Astra..." bigger and better!

DISKETTE STORAGE BOXES

We have on hand a small number of plain white boxes of the type that diskettes are usually purchased in. These boxes are available for $.50 each. Send an 8 X 10" envelope with enough postage for your boxes. Each box weighs approx. 1 oz. We will investigate the possibility of printing the "Ad Astra..." logo on the boxes at a later date!

IMPORTANT!

It is VERY important that members who have moved or changed their address to contact Net HQ with the new information immediately.

Also, if you feel that the "subscription" information on your mailing label is not correct, please send a photocopy of your check or a copy of your confirmation letter (the letter that was sent to you when you registered with the net.)

I try very hard to keep all information current and I have 2 separate data bases for all members. Of course, it IS possible that I goofed somewhere along the line! Let me know if you think I did!

THANKS!

Jack, WD8BNG

MORE MODS FOR THE Ad Astra... Interface

by Toby Hoover, WB9ZDV

After building the "Ad Astra..." TU, aligning it and getting it in working order, I started to run some tests. First of all, it seemed to work better without the RTTY filter on the input. This may have been due to audio rolloff in my receiver, but nonetheless I got better results by hooking the audio to pin # 2 of the XR-2211 through a .1 uf capacitor. On the AFSK part of the board, I replaced the two (2) 6.2K resistors with two (2) 4.7K resistors. I also replaced R4 with a 3.3K resistor in order to give just the right amount of drive for the mike circuit of the Kenwood 520S. If you need more drive, change R3 to a 4.7K and add a .02uf capacitor to pin 8 of the XR-2211

The modifications shown in the accompanying schematics will allow you to modify the "Ad Astra..." interface to record or play back RTTY from an audio tape recorder (true "brag tapes"!), and also to provide true RS-232 signal levels should you be using a program that uses the RS-232 on the '850 interface (such as the K7ZJD RTTY programs).

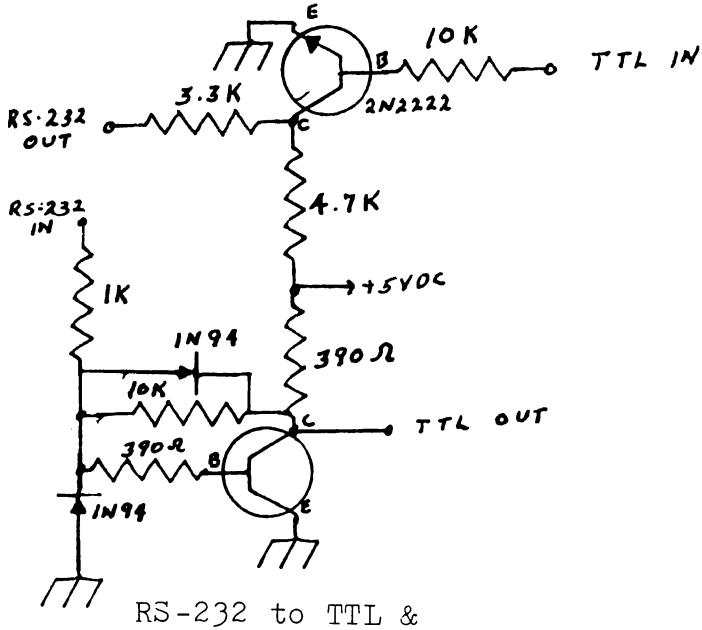
The diagram shown is for normal RTTY, which makes the unit easier to build. If you need reverse RTTY, you can add it later. If you look at the original schematic, you will notice that the 7410 has 3 inputs: one for sending RTTY, one for CW ID (no longer required by the FCC), and one that will allow the FSK demodulator key the AFSK (regeneration).

The added switch is used in this fashion: Bottom position allows the computer to control the PTT on the transmitter. The center position is used for making canned messages on tape or storing received messages in a regenerated form on tape. The top position is used for sending the taped messages through the AFSK circuit!

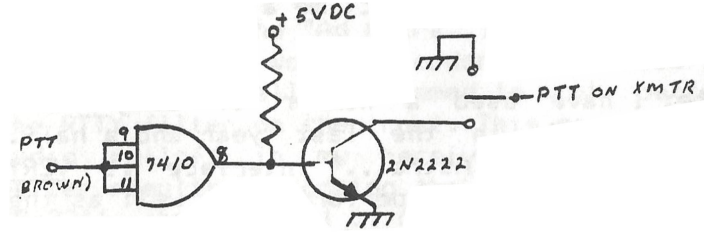
I can provide simplified versions of the "Ad Astra..." interface to members who wish them in order to get on RTTY cheap! I am also going to make the TTL/RS-232 option available. Contact me for prices on built-up boards with the options that you require. Home-brewed bare PC boards are also available for $12 (TX/RX pair).

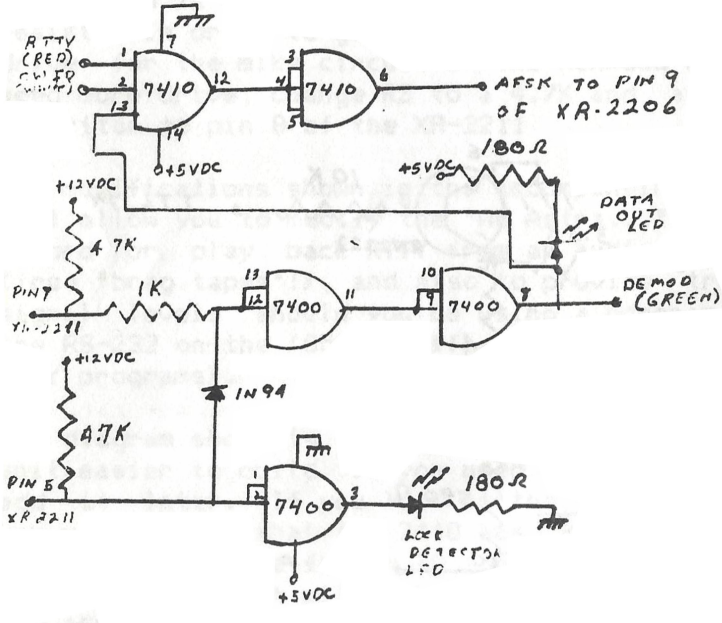
If you have any questions, contact me at 635 Osage Rd., Valparaiso, Indiana 46383

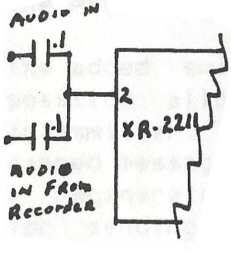
Editor's note: I have used a number of single-tone demodulators and TUs in the last year and a half. Toby's version of the "Ad Astra..." interface is VERY simplistic in design, yet performs as well as the original. It is many times as sensitive at the Kantronics Interface I and seems to be as good as the MFJ interface.

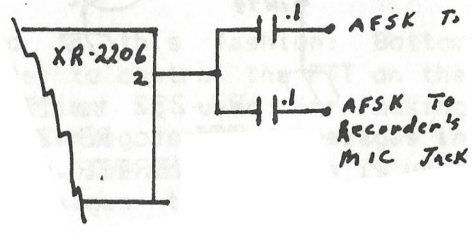


RS-232 to TTL &
TTL to RS-232
CONVERTER


+5VDC
PTT ON XMTR
PTT
BROWN)
7410
2N2222


RTTY
(RED)
7410
7410
AFSK TO PIN 9
OF XR-2206
+5VDC
180Ω
+12VDC
DATA
OUT LED
4.7K
PIN 7
1K
7400
7400
DEMOD
(GREEN)
+12VDC
IN 94
4.7K
PIN 5
XR 2211
7400
180Ω
LOOP
DETECTOR
LED
+5VDC


AUDIO IN
.1
.1
XR-2211
AUDIO
IN FROM
Recorder


XR-2206
.1
AFSK To Radio
.1
AFSK To
Recorder's
MIC Jack

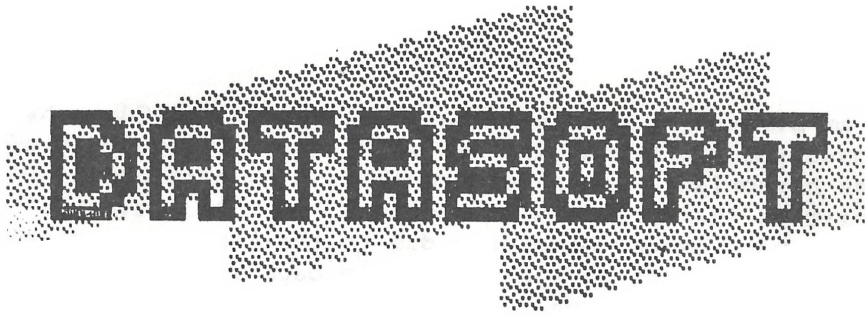
NEW SERVICE!

I am pleased to announce that Phil Weaver, W0OJL, has consented to become the net's "Historian". The duty of the historian is to provide members with photocopies of articles that previously appeared in "Ad Astra...". This has become necessary due to the large demand for reprints and the lack of available back-issues of the journal. During our initial expansion period, it was relatively easy to provide back-issues to new members because it was financially possible to print a few extra issues of "Ad Astra..." during each run. As we expanded in membership, the cost of the journal became greater per issue due to the increase in size. In short, we reached a point at which it was inpossible to print more issues than were absolutely needed with about a hundred extra to cover new members during the period between issues.

To help out, Phil Weaver, W0OJL, has volunteered his services to provide selected articles from issues of the journal to members upon request. The procedure is simple:

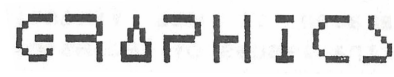
If you know how many 8-1/2 x 11" photocopies it will require to provide a specific article, then remit the sum of 10 cents per page plus 50 cents per order for handling. If you don't know haw many pages are required, then just remember that the average article is about three pages long, 'though some of them are indeed longer.Example- 1 article of one page, 1 article of 5 pages and 1 article of 12 pages= 18 pages to be copied ($1.80) plus 50 cents handling would be $2.30 to be remitted to the historian. PLEASE DO NOT ASK FOR MORE THAN THREE ARTICLES per request. I know that some folks would like to have the entire library of back issues, but I urge you to use some restraint in your requests so as not to create a burden on Phil. If you need additional copies or a large printing, please contact Phil before making the request in order to make sure he will be able to handle the work load.

Major Philip Weaver, W0OJL
919 Bordeaux Avenue
Omaha, Nebraska 68123



SOFTWARE REVIEW
By Sheldon P. Wesson

GRAPHIC GENERATOR
GRAPHIC MASTER
MICRO PAINTER
COLOR PRINT
By Datasoft, Inc.



48K Disks $30 to $40 each

One of my hobbies is letterpress printing and typography. I bought an Atari computer for the graphics, after seeing colorful screens in games such as ASTROCHASE and FROGGER. Atari graphics is topic with a lot of detail, however, and I wanted to use my computer to compose and reproduce complex images without mastering volumes of programming technique. I found a set of four graphics utility programs from DATASOFT that can create custom alphabets (fonts), draw and color pictures, assemble pictures and letters on the same screen, and print out in black and white or in color. The screens can also be saved to disk for use in other BASIC programs. These DATASOFT utilities give my computer the capabilities of a home printshop -- I can custom design letterheads, envelopes and Christmas cards, or compose multicolor computer paintings suitable for framing. In this review I will describe what these utilites can do, and how they can be used together to comprise a home graphics workshop.

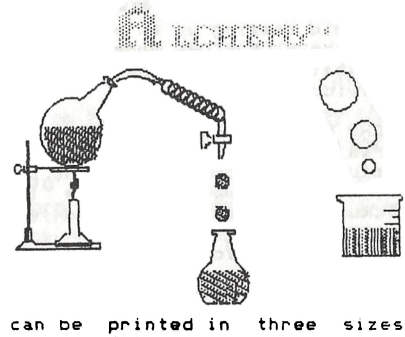
GRAPHIC GENERATOR is a character set utility, a program for creating custom type styles. The Atari computer comes with one character set, a rather plain-looking Gothic font. This utility is used to replace the standard set with one of your own design. The main feature of the Master Menu is EDIT, which creates a magnified view of the alphabet on the screen, one letter at a time. Each letter is presented as a group of colored blocks in a 4x8 grid, and the letters are modified by adding or erasing the blocks with a joystick-controlled cursor. The user can select one color per letter in graphics modes 0, 1 and 2, or create multilolored letters in modes 4 and 5. The modified alphabet is then saved to disk using a special extention.

Another feature is the CREATE command, which groups letters to form matrices. The user can fit two or more letters togther on the screen and replace the letters with a single larger picture. The picture is saved to disk as a matrix, which can then be PRINTed with a BASIC routine -- a quick way to create players for games. Pictures of a moving figure can be PRINTed in rapid succession to create animated motion. (Program DEMO2 is provided on the GRAPHIC GENERATOR disk to show how this is done.)

The GRAPHIC GENERATOR disk also includes four fonts, a BASIC subroutine for incorporating custom fonts in user programs, and a routine for accessing graphics modes 4 and 5. The packaging of this utility is sloppy: my documentation is riddled with typographical errors (the extention for character sets is .FNT,, not .SET), and DEMO1, the character set display program, does not work properly. The main program is well composed, however, and its function dovetails neatly with that of GRAPHIC MASTER, the central program in this collection of utilities.

GRAPHIC MASTER features two screens on which drawings and text are assembled. One screen serves as a scratch sheet, where design elements are loaded in from disk, or drawn with a joystick. The user lifts the elements from the scratch sheet with a scrolling window and transfers them to the design sheet, positioning them precisely into place. The two-screen system allows the user to experiment and to refine portions of the design on the scratch sheet without blotting up the emerging product on the other page.

The DRAW mode provides four options for creating designs: the user can move a cursor to draw a free line; use the LINE function to connect points; create CIRCLEs of various sizes, or generate POLYGONs with three to nine sides. A screenful of design motifs can be generated with these functions and then saved to disk. This screen can then be loaded into the scratch sheet and the motifs picked off to create other designs.



The TEXT mode allows the user to mix letters with graphics on the screen. Letters from the standard character set are typed in place or moved from the scratch area to the design screen. Custom fonts created with GRAPHIC GENERATOR can be loaded in from disk; hitting START A in the TEXT mode toggles between the standard set and the special font. Words and letters can be printed in three sizes; skewed; underlaid with colored patterns, or filled with color.

Most of the action takes place in the EDIT mode, in which the user moves a square window between the two screens. A window size is selected that is large enough to surround the image to be transferred. GRABbing the image causes a duplicate to travel inside the window, and hitting the joystick trigger button deposits a copy of the image where required. Other functions ROTATE, INVERT, SKEW, ZOOM (shrink or magnify) the contents of the EDIT window before the image is deposited. The window may be TRANSPARENT to allow underlying features to show through empty portions of the window. This is useful for precise alignment of one image upon another. The UNDERLAY function is used to mask partially one image with another, or to color backgrounds without affecting a foreground image. The screen and EDIT window may both be INVERTed to color letters and pictures in the UNDERLAY mode without altering the background. Mistakes are quickly erased by holding the trigger button down while moving an opaque window over the offending area.

Graphics mode 8 (O.S. mode 15) supports only two colors, but an infinite variety of colorful patterns can be created in GRAPHIC MASTER by artifacting, or altering the color of a line of pixels by manipulating the color of adjacent pixels. The user can create swatches of colored patterns and save a group of these swatches to disk. These swatches, when loaded onto the scratch page, serve as a palette from which the EDIT window can lift color to smear across the design screen. The GRAPHIC MASTER disk contains a palette file, and screens of chemical and electronic schematics. The disk also features BASIC utilities for listing pictures to Epson MX-80 or NEC 8023-A printers, and for calling pictures from user programs.

MICRO PAINTER is the utility for color manipulation. Operating in graphics mode 7+ (O.S. mode 14), this program allows the artist to paint with four real colors, striped shades, and checkered artifact colors. Creating a painting consists of drawing a cartoon and coloring its sections; both

operations may be controlled with the keyboard or joystick. The DRAW mode has a unique rubber-band line option: a point is placed with the cursor, and a connecting line then follows the cursor until a second point is planted, allowing the line to be previewed before being deposited on the screen. The MICRO PAINTER disk features a number of cartoon files for the user to color.

After drawing a cartoon (or loading a sketch from disk) the artist chooses one of 128 combinations of hue and luminance for each of the four color registers. Selections are recorded in a color menu that runs across the top of the screen. Sections of the drawing are filled by selecting a color from the menu, positioning the cursor, and hitting the key or trigger button. The sketch can also be filled with stripes and checkers. (Artifacting can produce unexpected color effects: while solid colors can easily be erased, artifact patterns are difficult to replace, so the artist should experiment beforehand to avoid messing up an emerging masterpiece.) Detail work is handled with the MICROSCOPE mode, which magnifies the area around the cursor so that small patches and even single pixels can be colored individually.

MICRO PAINTER files can be loaded into GRAPHIC MASTER, and vice versa, allowing the functions of both programs to be performed on one picture. The colors from one program will not reproduce properly in the other, however, because the graphics modes are different. A picture file can be switched from mode 15 (GRAPHIC MASTER) to mode 14 (MICRO PAINTER) with the conversion routine in ANTIC, Vol.1 #5, page 42. (Mode 15 pictures can also be saved to disk from MICRO PAINTER after adjusting the color registers.) Another problem is that a display subroutine for user programs is not supplied on the MICRO PAINTER disk: the routine published in ANALOG #12, page 24 remedies this oversight. Some sophisticated examples of MICRO PAINTER art appear in ANTIC, Vol.2 #4, page 67.

COLOR PRINT uses the dot graphics capability of the Epson MX-80 and NEC 8023A printers to produce hardcopies from GRAPHIC MASTER and MICROPAINTER files. Pictures can be printed in four sizes, two each in the vertical and horizontal directions. The left margin width can also be specified to position pictures precisely within text or among other printed designs.

This utility will print out in black-and-white, but its specialty is four-color registry printing. Carbon paper in several colors is supplied with the program. A carbon is sandwiched between sheets of fan-folded paper, and the paper sandwich is positioned in the printer. (Registry marks are made on the paper and on the printer so that the sandwich may be returned to exactly the same starting position to print each successive color.) The color print option causes each color in the picture to print out separately, and the carbon is switched after each run. I recommend that the paper sandwich be made two sheets long on a side instead of one, to defeat the paper-out switch, and also to ensure that the tractor pins don't run out of holes at the bottom of the picture page.

NEW MEMBERS!

Once more, we welcome almost a hundred new members to the net! If any of you have been wondering what I do in my "spare" time, be assured that the continuing expansion of the net keeps me busy writing letters and doing data processing. In the last issue's listing of new members, I issued a challange to see if we could reach member #700 before this issue... well, we did it (even though this issue is late) and I am happy to report that we now have a good jump on 800 members!

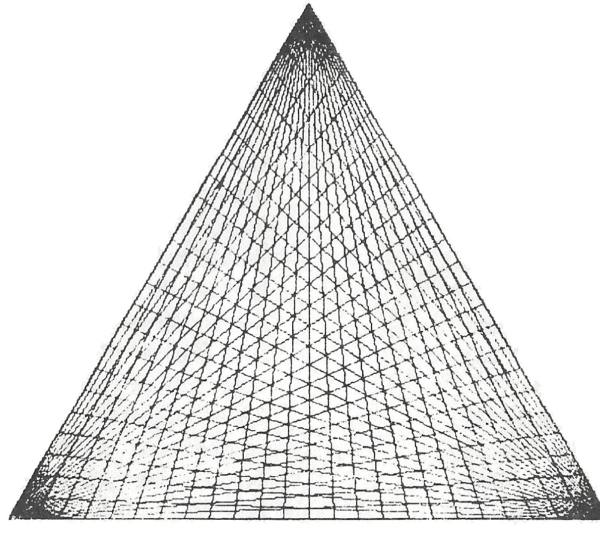
If the Christmas season provides a decent sales margin for ATARI, (which it should IF ATARI gets the products on the shelves AND if they stop being so namby-pamby with their advertising campaigns) then we will likely see another big jump in membership as we did during last year's holiday season. Coupled with yet another SUPER RTTY/ASCII/CW package from Macrotronics, ATARI computers are seeing more acceptance in the amateur ranks than ever before.

At any rate, we welcome ALL of you to the net and hope that you will all check in or listen in to your regional/local nets as well as the national net. Until the next membership report, 73! DE Jack, WD8BNG

Ed Jones KC2HP #622
Douglas Kleeman KA9LWN #623
Michael Eng N6HOI #624
Lawrence Kettel N8EXK #625
Jeff Moss KC5ZV #626
Jerry Mangas #627
Jack Rubeck K7VKR #628
Tammy Lee Humphrey WD5BTU #629
Marc Greenlaw KA8SOC #630
Dave Mentley #631
Nancy Guddemi KA2HNQ #632
Dwain Johnson W8CL #633
Ken Godsey KA4MIE #634
Charles Skaggs (SWL) #636
Bob Braman (SWL) #637
David Doherty VE3LCH #638
Gary Lippert K7VBY #639
Dick Taylor K4EED #640
Gabriel Lantos KZ2A #641
Al Sloman KD2H #642
Ron Mac Kinnon WA2JRY #643
Richard Lowrie KA8GUL #644
Brad Dye WB4JCF #645
John Gjerdevig K8BOB #646
Fletcher Fincher KA5ROK #647
Tim Carrabine WB8ROB #648
Jay Gooch W9YRV #649
Sherwin Gooch WA9JLE #650
David Mitchell #651
Charles Andrews KH6DTN #652
Jim Weinert WB9NNK #653
George Pasquet KA9BRO #654
Donald Miller KA4HBM #655
Michael Hucke #656
Warren Grimes WA1YLX #657
Chad Greene WD8FVJ #658
Scott Schram KN4L #659
Steve Sponseller N8DKJ #660
Larry Prelog KE4PM #661
Jack Prather W6KJP #662
Tony Fritzel #663
Maurice Garrick N6APZ #664
George Laverick KE4DM #665
Tommy Bell Jr. N3ALU #666

Ken Bramblett KK4Y #667
John Stinson VE6BOS #668
Ronald Lewis WB6QNG #669
Ian Young ZL1AOY #670
Chuck Heichlinger W4NPS #671
Arthur Park KH6GEZ #672
Jaime Poch CE3FIP # 673
Jay Ray Jr. #674
Andrew Six #675
David M. Burke WA4CHY #676
Curtis Foote N4IRX #677
Willis A. Wilson #678
Larry Baley KD8GT #679
Bobby Jones K4ZU #680
Carl Huval #681
William A. Brown WB4QDD #682
Lenard Dela Cruz #683
Ken Waibel #684
Dominie Oskis #685
Scott Lytle #686
Bob Davis N8CW #687
Joe Laukaitis K2FH #688
Ray Hutson KC9IG #689
Ed Andres KA8KUX #690
Bob Bukowski KA9KBI #691
Danny Malone AA4DM #692

Chris Anderson N7CUJ #693
James Merkel WB3LPI #694
Jim Pehrs N0BTU #695
Steve Verschloyle N5CJO #696
Neil Petlock K9WRL #697
Mason Barger #698
Jack Beloate N4CYL #699
Blaine Ballard Sr. KB3UP #700
Ted Maimar WD9JLB #701
Charles McClellan DA2KU/WD4Z #702
Edgar Reyes #703
Stu Beal VE3MMM #704
Larry Stramm WB3EVL #705
Rutgets Univ. ARC WA2NPP #706
George Clark N6HFE #707
Doug Dorton N7BND #708
Bernard Ginsberg M.D. KC6P #709
Tim Adcock #710
Richard Wiitala WB8YZD #711
Joseph Rowe AG2Y #712
Wade Malcom WB3AZE #713
Clifford Parody K3EER #714
Bill Andrews WB2LCF #715
Aaron Hill WA9FTO #716



REVIEW
Scott Persson's CT-X RADIOTELETYPE SOFTWARE
by Jack McKirgan II, WD8BNG

I was pleased to receive a copy of Scott Persson's (WB0QPP) CT-X RTTY program from Scott. I am always happy to see our members come up with commercial -quality software and I am pleased to present this review.

"CT-X" is a RTTY-only program that makes optimum use of the ATARI's sound capabilities. This, of course, means that the equipment needed to operate your ATARI computer in conjuction with your ham radio equipment is much simpler. "CT-X" is available on cassette tape only, so there is no longer a problem with cassette-based systems being subjected to the sometimes prohibitively priced ROM-based software. Each program is prepared for the individual purchaser with his/her callsign programmed into the machine-language subroutines for CW-ID. The program is in BASIC with extensive use of machine language subroutines which are compiled at the beginning of the run.

Unlike any other RTTY program on the market, this one allows you to enter the MARK and SPACE frequency (which also allows you to operate in the "REVERSE" audio shift mode. You may then select your RTTY speed from 50 to 150 WPM. The program makes use of the ATARI's voice capabilities for AFSK. To this end, your TU need only be a demodulator. Interfacing for RTTY transmit is a simple matter of plugging the 5-pin DIN plug's audio line into your tranceiver's mike line. Because different tranceivers require different drive levels, the program will prompt you to set the audio level needed. (My Yaesu FL-101 transmitter needed only a level setting of "2").

The screen uses a custom display list and the top line is a "status" line indicating whether you are in transmit or receive mode. The console keys are used to toggle between transmit and receive in various combinations with the CW ID (no longer required by the FCC). Additional keys for special RTTY characters are also provided: LF, LTRS, FIGS, BELL.

Interfacing is a little bit different from merely plugging the TU into the PIA of the ATARI and you should have at least four 2N2222, ECG-123 or similar NPN transistors on hand. If the rig needs reverse keying, the PNP equivalent should be used. One nice feature is that Scott has included the ability to have two transmitters, an HF and a VHF, on line at the same time. The documentation describes the operation of each rig and there are provisions for FSK keying of a HF rig. ATARI 400 owners, you will be delighted to know that the AFSK capabilities are not lost to you! Scott says that you can tap direct audio off of pin 10 of J-107 on your motherboard through a .01uf capacitor. This is good information indeed!

OPERATION

"CT-X" is very easy to use and should be a good choice for anyone who is contemplating trying out RTTY and is not sure if he/she want's to be serious about it. There are some very strong points to the implementation of the program (I particularly like the logical use of [CONTROL "2"] for the BELL). Also, I like the ease of interfacing and the clean, straightforward display. This last point is especially important for beginners in RTTY operations. The feature of being able to set your mark-space frequencies can be useful if you and a fellow ham want to have a slight amount of privacy. (Really fouls-up someone with a non-adjustable TU and is quite legal as long as your tones are not separated beyond the FCC's guidelines.) Most TU's can be used with "CT-X" and an inexpensive demodulator is really all you need anyway!

There are two things I would like to have seen implemented in "CT-X", a type-ahead buffer and printer support. The latter would require revision of the program to allow further interfacing through the PIA and I can understand the lack of this function because of the development time involved vs. cost of the program. (You really need PIA output for the printer because going through the complex serial port would tie-up the computer and probably loose some characters during receive.)

SUMMARY

Sure, there are more complete and complex RTTY programs on the market, but for the money, this is quite a bargain! It effectively operates like an ASR-33 without all of the clatter! If you are not a fast typist or are used to a regular teletype unit, you won't have any problems working with "CT-X". By the time this review reaches you, Scott should have a ROM-based RTTY/ASCII/CW program that is packed with advanced features, including upload and download from disk or tape. Price of "CT-X"? Only $15! Contact Scott at:

4719 Valley Street
Omaha, Nebraska 68106
(402) 556-9648

DE Jack, WD8BNG

CLASSIFIEDS!

SWEEPSTAKES DUPING PROGRAM for sale: Disk based program allows saving files to disk, loading from disk, fast sorting, printer $ screen formatting options are supported. $15 from Nick Balovich, WN4P, 912 General Jackson Dr., Viginia Beach, VA 23454 (Editor's note: this is a SUPER program!!!)

FOR SALE: 810 Disk Drive. NEW in never-opened box. $350, including shipping via UPS. Contact Adrian Bordelon, KA5BFX per callbook address or call (512) 992-8484

RTTY EMULATOR in OSS BASIC A+. I have developed a RTTY program for the ATARI Computer System. Written in OSS BASIC A+, this program is available on disk only. Price: $15. Paul Littlejohn, KE4DY, 2353 Ilext Court, Charlottesville, VA 22901

HELP needed for using the graphics features on my Okidata uL-82A. I am having trouble translating the commands into ATASCII code for use in my programs. Any help would be appreciated. Al Kruhm, K2BSM, 70-16 171st St., Flushing, NY 11365 (212) 969-8142.

NEC 8023A-C CONVERSION
FOR RTTY TEXT DUMP
FROM PORTS 3 & 4
by Andy Dichter, WB9MBK

The low-current CMOS devices outputted to the ATARI gameports often do not have the power to drive the LS TTL circuits found in many printers. This has become a problem to many who use the Kantronics HAMSOFT RTTY program with their ATARI computers and desire hard-copy.

Logically, driver systems such as described in issue # 4 of "Ad Astra...", will supply the necessary output. Another alternative, which worked well with the NEC 8023A-CXX printer, was to raise the value of the "pull-up" resistors (see fig. 1) at the data bit inputs, making it easier for the ATARI to switch to the low logic state.

The modification for this printer is simple, but a few precautions should be observed, such as working in a static-free environment, etc. The circuit board is easily removed by snapping out the bottom grille and removing the four corner screws. When lifting the board, it becomes evident that some interconnecting cables must be removed. Although they all have connectors, exercise caution with respect to straining and bending the board.

The resistors are in a single package (see fig. 2), which consists of ten 1K resistors tied to a common lead (which accounts for the 11 pins!). Carefully unsolder and remove this package. For those of you who know where to find them (I didn't!), replace it with a higher-value package (6.8K nominal). Discrete resistors can be used also. A socket, either fabricated by splitting lengthwise a 22-pin (or higher) IC socket or purchased as is (GC Electronics "Single In-Line Component Adaptor" #41-511) is recommended. Discrete resistors should be tied together first (see fig. 3).

Performance of the printer through the ATARI 850 interface is unaffected. The low 1K resistors were obstensibly chosen to ensure a short time-constant (fast switching) in the event that excessive cable lengths were employed.

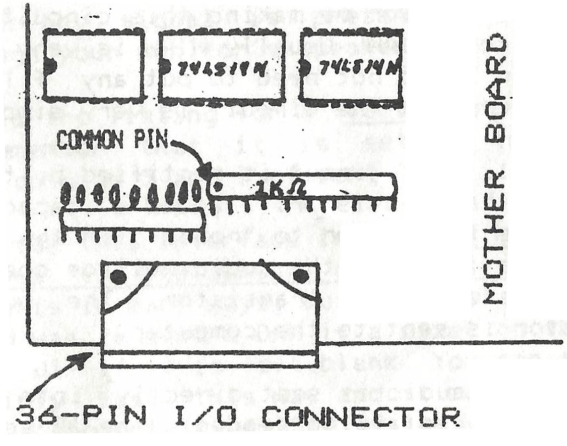
One final note: before reactivating the printer, remove the top enclosure and be sure to REINSERT THE EXCESS CABLE LEAD going to the print head, back under the metal clip which is located to the left of the feedthrough opening.

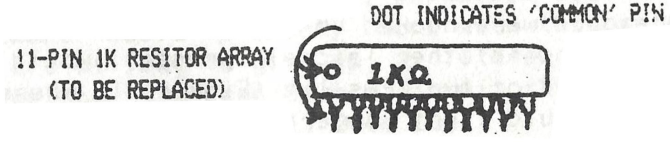
Special thanks to Bill, W9JIG and Jack, WD8BNG for their technical assistance.

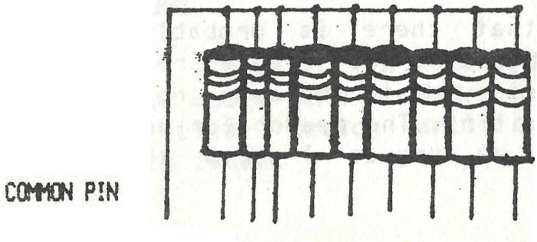
¥ See Randy Agee's article on a printer-port switching circuit in issue # 4, pages 29 and 30 of "Ad Astra..."

¥¥ The NEC 8023A-C is also sold under the trade name "PROWRITER" from Leading Edge Products, it is also sold under the Apple label, and it's generic manufacturers' name of TEC. Except for cosmetic changes and slightly different fonts, they seem to be identical, thus this article should apply to all.

(Editor's note: Several members have made comments about other printers not responding to the wiring of their printers (noteably Okidata Microline series) to the game ports for the text dump. Perhaps this is the answer to their problem too??!! Jack, WD8BNG)







ATARI/MORSE CODE RECEPTION- THE EASY WAY

by Douglas Kleemann, KA9LWN

Have you ever wanted a nice simple project to build on one of those boring Saturdays when there is nothing else to do? Well, if that has ever been the case with you, I have the circuit for you!

When I designed this, I wanted something simple that almost anyone with little electronics background could make. I also wanted the parts to be very available, since with most projects there is usually one or two ICs that you just can't get your hands on. All parts used in this CW interface should be in your junque box, but can be bought at any Radio Shack store.

The main reason for me making this circuit was to have my 40O copy W1AW. Usually W1AW is very strong in our area and so I did not need to put any filter circuits in my interface.* The circuit is very simple:

In figure 1, audio input is rectified by the diodes and sent into the transistor. I added a capacitor on the base of the transistor to "round off" the signals. When a CW tone is sent, the audio voltage goes up and thus keys (turns on) the transistor. The output of the transistor is sent to the computer.

In figure 2, audio is sent directly into the IC (no limiting or rectifying needed). The IC sends the audio through a rectifier and rates it's voltage on a scale of 1 to 10, according to it's strength. Thus, if a ten-LED readout were hooked up to he outputs of the IC, simple noise and no other signal present would show with only one or two LEDs lit (Figure 3). Whereas, a good CW tone would light several LEDs on the scale (Figure 4).

Now, I know that there is probably a mad mob of electronic engineers out there ready to send this circuit to a fiery death because no provisions were made for limiting. The reason for no-limiting is that none is needed as long as I keep the volume at an

acceptable level. Make sure that you set the volume only high enough for the circuit to detect a good clean CW signal!!! Failure to do so may result in a Kentucky-fried transistor!

Use of this circuit is very simple. You simply hook the output of the interface to a PIA port (joyport) on your ATARI. I hooked mine to port #1, pins 5 and 7 (fig. 2). To monitor what is actually happening in the circuit, you might try this program (you MUST use port #1, pins 5 and 7 as prescribed).

```
10 IF PADDLE(1)=50 THEN SOUND 0,115,10,8:GOTO 10
20 SOUND 0,0,0,0: GOTO 10
```

Now, whenever any signal is present, it should be echoed through your monitor's speaker!

Figure # 3 is the listing for a very simple CW copy program. Remember that it is set up to decode the information on pins 5 and 7 of port 1.

Another use for this interface is to send hi or lo-res pictures over the telephone or on the air! You can accomplish this in many ways, but the best method that I have found was to send a DAH if a pixel on the screen is lit and a DIT if it is left blank. You can send some screens fairly fast this way and it makes for a very inexpensive, 'tho primitive SSTV system. ($1.49 is a GOOD price for SSTV capability, ED.) I hope you have fun with this circuit. I know I did! Most other software would probably work with this interface. If you are willing to give up a little sensitivity and filtering, you can have a circuit that will rival the Kantronics Interface I. Good Luck!

DE Douglas, KA9LWN

¥ See the filter schematic in Vol. 2 # 2 of "Ad Astra..." if you would like to add a bit of filtering. Also see the filter design article and program elsewhere in this issue.

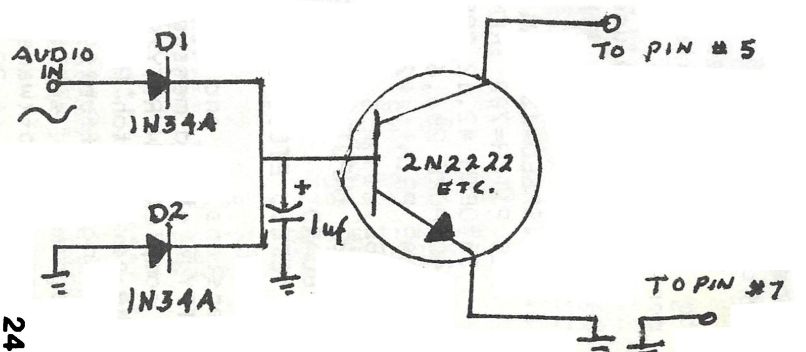
ATARI MORSE CODE COPIER

Fig. 3

```
1 GR.0:DIM A$(3333),B$(20),I$(20)
2 FOR T=1 TO 26
3 READ I$,B$:A$(VAL(B$),VAL(B$))=I$:NEXT T
5 GR.0:PRINT"RECEIVING
6 B$=""
10 A=PADDLE(1)
20 IF A>50 THEN 40
25 POKE 15463,42
30 K=K+1:U=0:GOTO 10
40 POKE 15463,0:U=U+1:IF K<>0 THEN 100
50 IF U<6 THEN K=0:GOTO 10
55 IF U>12 THEN IF PEEK(15504+CH)<>32 THEN CH=CH+1:POKE 15504+CH,32
60 IF B$="" THEN PRINT"";:GOTO 80
61 IF VAL(B$)>3333 THEN 200
70 I$=A$(VAL(B$),VAL(B$))
75 CH=CH+1:POKE 15504+CH,ASC(I$)
80 B$="":K=0:V=0
90 GOTO 10
100 IF K<6 THEN B$(LEN(B$)+1)="1" ELSE B$(LEN(B$)+1)="3"
110 K=0:GOTO 10
200 IF B$(1,1)="3" THEN 290
210 IF B$="131313" THEN I$=".":GOTO 75
220 IF B$="113311" THEN I$="?":GOTO 75
230 IF B$="13313" THEN I$="/":GOTO 75
240 IF B$="13333" THEN I$="1":GOTO 75
250 IF B$="11333" THEN I$="2":GOTO 75
260 IF B$="11133" THEN I$="3":GOTO 75
```

```
270 IF B$="11113" THEN I$="4":GOTO 75
280 IF B$="11111" THEN I$="5":GOTO 75
290 IF B$="31111" THEN I$="6":GOTO 75
295 IF B$="331133" THEN I$=",":GOTO 75
300 IF B$="33111" THEN I$="7":GOTO 75
310 IF B$="33311" THEN I$="8":GOTO 75
320 IF B$="33331" THEN I$="9":GOTO 75
330 IF B$="33333" THEN I$="0":GOTO 75
332 IF B$="31113" THEN PRINT"BT"
333 IF B$="3311111133" THEN PRINT"73"
334 IF B$="111313" THEN PRINT"SK"
335 IF B$="13131" THEN PRINT "AR"
340 I$=" ":GOTO 75
1000 DATA A,13,B,3111,C,3131,D,311,E,1,F,1131,G,331,H,1111,I,11,J,1333,K,313,L,1
311,M,33,N,31,O,333,P,1331,Q,3313,R,131,S,111,T,3,U,113,V,1113,W,133,X,3113,Y,31
33,Z,3311
```

Fig. 1



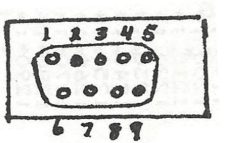


Fig. 2

```
1120 ;*      PUTTING YOU BACK IN THE *
1130 ;*      BUG MODE. BUT THE MORSE *
1140 ;*      HANDLER IS NOW INSTALLED*
1150 ;*                              *
1160 ;*  7.  TRY SENDING MORSE AFTER *
1170 ;*      ENTERING THE "LIST" CMD *
1180 ;*      IN THE EDIT MODE.       *
1190 ;*      MAGIC!                  *
1200 ;*                              *
1210 ;*  8.  TO CHANGE SPEED OR      *
1220 ;*      PITCH DON'T REASSEMBLE  *
1230 ;*      THE PROGRAM. JUST USE   *
1240 ;*      THE "C" COMMAND IN DEBUG*
1250 ;*      ( C B0<10 FOR 18 WPM ETC*
1260 ;*        C B3<5B FOR 700HZ )   *
1270 ;*      THEN HIT THE "ESC" KEY. *
1280 ;*      THIS RESETS EVERYTHING. *
1290 ;*                              *
```

MORSE CODE GENERATOR
by John C. Day, KA4CUB

The following program in assembly language is a preliminary version. It is not perfect or complete, but is realy shows off the tremendous capabilities of the ATARI Computer System. The source code is 12K but is only 500 bytes assembled. If you have a 16K machine, you will have to leave the comments out of the source code so it will fit. (Also, change ORIGIN=$3D00).

Version 2.0 will be finished shortly and will be much more useable:

1. Subroutines KEYUP and KEYDOWN will be modified to drive an external keyer from the PIA (joystick) ports.

2. It will be used at device "M:" under CIO. From BASIC it will run like this:

```
10 SPEED=13 :REM WPM
20 PITCH=700 :REM HZ
30 OPEN #2,12,SPEED,"M:"
40 POKE 206,64000/PITCH
50 PRINT #2;"CQ CQ CQ DE KA4CUB";:REM CANNED MESSAGE
60 INPUT #2;KEYBD$: REM ACEPT CHARACTERS FROM KEYBOARD
ETC., ETC., ETC!
```

Versions 3.0 and beyond will contain a morse decoder, RTTY, stored messages etc. My ultimate goal is to have a complete CW/RTTY/SSTV package that we can show off at the next Dayton Hamvention. I would be interested in pooling my efforts with those of other machine language programmers so that we can produce a completely integrated software system. Anyone interested, please contact me at 70 Bluebird Blvd., Indian Harbor Beach, Florida 32937.

```
0100         .OPT NOOBJECT,LIST
0110 ;*******************************
0120 ;*                             *
0130 ;*    MORSE CODE GENERATOR     *
0140 ;*                             *
0150 ;*          INTERRUPT DRIVEN   *
0160 ;*          MORSE GNERATOR.    *
0170 ;*          INSTALLED AS KEYBD *
0180 ;*          HANDLER. REQUIRES  *
0190 ;*          ASSEMBLER CARTRIDGE*
0200 ;*                             *
0210 ;* DESCRIPTION: THIS GENERATOR *
0220 ;*    IS COMPLETELY INTERRUPT  *
0230 ;*    DRIVEN AND USES NO TIMING*
0240 ;*    LOOPS OF ANY KIND. THERE-*
0250 ;*    FORE IT CAN RUN IN THE   *
0260 ;*    BACKGROUND AND GENERATE  *
0270 ;*    CODE WHILE THE COMPUTER  *
0280 ;*    IS "BUSY" DOING OTHER    *
0290 ;*    TASKS.                   *
0300 ;*                             *
0310 ;*    THE HANDLER ALLOCATES    *
0320 ;*    THE LOWER 128 BYTES OF   *
0330 ;*    THE HARDWARE STACK($0100-*
0340 ;*    $0180) AS A "TYPE AHEAD" *
0350 ;*    BUFFER. THE USER CAN KEY *
0360 ;*    CHARS AS FAST AS DESIRED *
0370 ;*    AND THE HANDLER STILL    *
0380 ;*    PLAYS THEM BACK AT THE   *
0390 ;*    PROPER MORSE SPEED.      *
0400 ;*    (ADJUSTABLE: 1-290 WPM)  *
0410 ;*                             *
0420 ;* SPECIAL CHARACTERS:         *
0430 ;*  KEYBD        MORSE         *
0440 ;*  =====        =====         *
0450 ;*  "="           SK           *
0460 ;*  "*"           AR           *
0470 ;*  ";"           BT           *
0480 ;*  "<"           ERROR        *
0490 ;*  ">"           QUESTION     *
0500 ;*  "+"           AS           *
0510 ;*  "-"           KN           *
0520 ;*  ESC       (CLEARS BUFFER)  *
0530 ;*  BACKSP    (DELETES LETTER) *
0540 ;*                             *
0550 ;* (THE ">" FOR QUESTION WAS   *
0560 ;*  USED TO AVOID SHIFTING.    *
0570 ;*  "SHIFT /" ALSO WORKS.)     *
0580 ;*                             *
0590 ;*                             *
0600 ;*                             *
0610 ;*******************************
0620 ;*                             *
0630 ;* USER-DEFINABLE  VARIABLES:  *
0640 ;*                             *
0650 ;* ADR  NAME        PURPOSE    *
0660 ;* ===  ====        =======    *
0670 ;* $B0  SPEED  $18 = 12 WPM    *
0680 ;*            (DIVIDE DESIRED  *
0690 ;*             SPEED INTO 290  *
0700 ;*             TO GET THIS NO.)*
0710 ;*                             *
0720 ;* $B3  PITCH  SIDETONE PITCH. *
0730 ;*            (DEFAULT 1KHZ.   *
0740 ;*             DIVIDE DESIRED  *
0750 ;*             PITCH INTO 64K  *
0760 ;*             TO GET THIS NO.)*
0770 ;*                             *
0780 ;* EQU  ORIGIN PROGRAM START   *
0790 ;*             AND ENTRY POINT *
0800 ;*                             *
0810 ;*  THIS PROGRAM HAS NO PRO-   *
0820 ;* VISION TO KEY A TRANSMIT-   *
0830 ;* TER AND IS INTENDED FOR     *
0840 ;* DEMO USE OR CODE PRACTICE.  *
0850 ;*                             *
0860 ;*  MEMBERS OF THE ATARI HAM   *
0870 ;* NETWORK ARE INVITED TO EX-  *
0880 ;* PERIMENT WITH THIS ROUTINE  *
0890 ;* AND HOPEFULLY CONTRIBUTE A  *
0900 ;* MORE USEFUL VERSION OF IT.  *
0910 ;*                             *
0920 ;* USER INSTRUCTIONS:          *
0930 ;*  1. LOAD SOURCE PGM WITH    *
0940 ;*     ATARI ASM CART "ENTER"   *
0950 ;*     CMD.                    *
0960 ;*                             *
0970 ;*  2. MAKE DESIRED CHANGES    *
0980 ;*     TO SPEED, PITCH, AND    *
0990 ;*     PROGRAM ORIGIN.         *
1000 ;*     (DEFAULT VALUES ARE     *
1010 ;*      12WPM, 1KHZ, AND $9000)*
1020 ;*                             *
1030 ;*  3. ASSEMBLE USING "ASM"    *
1040 ;*     COMMAND                 *
1050 ;*                             *
1060 ;*  4. ENTER "BUG" MODE.       *
1070 ;*                             *
1080 ;*  5. RUN USING "G 9000" (OR  *
1090 ;*     WHATEVER).              *
1100 ;*                             *
1110 ;*  6. NOTE THAT THE PROGRAM   *
1300 ;*                             *
1310 ;*  9. FOR FUN WATCH THE BUFFER*
1320 ;*     IN ACTION BY ENTERING   *
1330 ;*     THE BUG MODE AGAIN AND  *
1340 ;*     TYPE " C 9C24<0,0 "     *
1350 ;*                             *
1360 ;* 10. HIT RESET TO RESTORE    *
1370 ;*     NORMAL KEYBD HNDLR.     *
1380 ;*                             *
1390 ;*                             *
1400 ;* AUTHOR: JOHN DAY KA4CUB     *
1410 ;*         70 BLUEBIRD BLVD.   *
1420 ;*         INDIAN HARBOR BEACH *
1430 ;*         FLORIDA 32937       *
1440 ;*         HOME: 305-777-3668  *
1450 ;*  DATE:  15 MAY 1983         *
*******************************
```

```
D01F            1460 CONSOL  =     $D01F
D208            1470 AUDCTL  =     $D208
D20E            1480 IRQEN   =     $D20E
0010            1490 POKMSK  =     $10
D200            1500 AUDF    =     $D200
D201            1510 AUDC    =     $D201
D209            1520 KBCODE  =     $D209
D209            1530 STIMER  =     $D209
FEFE            1540 AJASCI  =     $FEFE
F6A4            1550 EOUTCH  =     $F6A4
0208            1560 VKEYBD  =     $208
0212            1570 VTIMR2  =     $212
9000            1580 ORIGIN  =     $9000      STARTING ADDRESS OF PGM
0000            1590         *=    $B0        WORKING STORAGE
00B0 18         1600 SPEED   .BYTE $18        MASTER SPEED CONTROL
00B1 00         1610 DOTSPEED .BYTE 0
00B2 00         1620 DASHSPEED .BYTE 0
00B3 40         1630 PITCH   .BYTE $40
00B4            1640 FIRST   *=    *+2        FIRST IN FIFO
00B6            1650 LAST    *=    *+2        LAST IN FIFO
00B8 00         1660 BUSY    .BYTE 0          LETTER IS BEING SENT
00B9 00         1670 SOUND   .BYTE 0          KEY IS UP = 0
00BA            1680 LETTER  *=    *+1        CURRENT MORSE LETTER
00BB            1690 COUNT   *=    *+1        MORSE ELEMENT COUNT
00BC 02         1700 BIT2    .BYTE $02        POKEY2 MASK BIT
00BD            1710         *=    $D700      SELECT BANK OF 256K RAM
D700 0C         1720         .BYTE $0C
D701            1730         *=    ORIGIN
                1740 ; MORSE CODE TRANSMIT ROUTINE
9000 200690     1750 MORSE   JSR   INIT        "INSTALL" HANDLER
9003 4C55A0     1760         JMP   $A055       GO BACK TO DEBUG
                1770 ; INITIALIZE PROGRAM VARIABLES
9006 A902       1780 INIT    LDA   #2
9008 85BC       1790         STA   BIT2
900A A5B0       1800         LDA   SPEED
900C C956       1810         CMP   #$56        MAX SPEED?
900E 9002       1820         BCC   INIT2
9010 A955       1830         LDA   #$55        MAX SPEED= XX WPM
9012 85B1       1840 INIT2   STA   DOTSPEED
9014 18         1850         CLC
9015 65B1       1860         ADC   DOTSPEED    DASH=DOT * 3
9017 65B1       1870         ADC   DOTSPEED
9019 85B2       1880         STA   DASHSPEED
901B A908       1890         LDA   #$08        CLEAR START KEY
901D 8D1FD0     1900         STA   CONSOL
9020 A9FF       1910         LDA   #$FF        SET UP POKEY
9022 8D00D2     1920         STA   AUDF
9025 A900       1930         LDA   #0
9027 8D01D2     1940         STA   AUDC
902A 8D03D2     1950         STA   AUDC+2
902D 8D04D2     1960         STA   AUDF+4
9030 8D05D2     1970         STA   AUDC+4
9033 85B8       1980         STA   BUSY
9035 205290     1990         JSR   SETVEC
9038 204590     2000         JSR   RESETQ
903B A510       2010         LDA   POKMSK
903D 29FD       2020         AND   #$FD
903F 8510       2030         STA   POKMSK
9041 8D0ED2     2040         STA   IRQEN
9044 60         2050         RTS
                2060 ; RESET QUEUE TO EMPTY
9045 A900       2070 RESETQ  LDA #$00
9047 85B4       2080         STA   FIRST
9049 85B6       2090         STA   LAST
904B A901       2100         LDA   #$01
904D 85B5       2110         STA   FIRST+1
904F 85B7       2120         STA   LAST+1
9051 60         2130         RTS
```

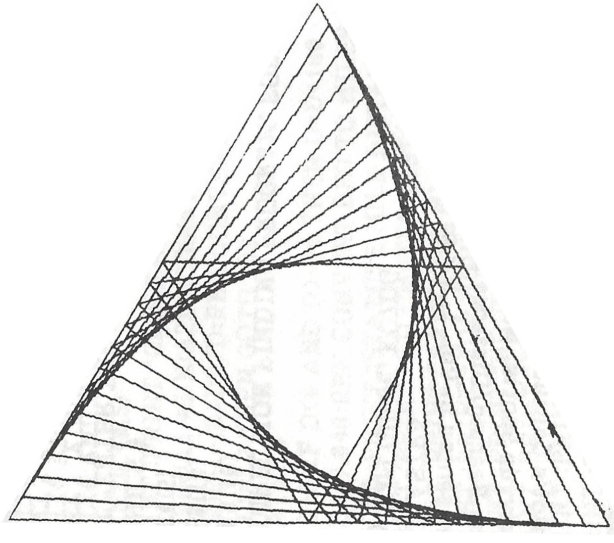
```
                2140 ; SET INTERUPT VECTORS
9052 A967       2150 SETVEC LDA  #INKEY&$FF
9054 8D0802     2160        STA  VKEYBD
9057 A990       2170        LDA  #INKEY/$100
9059 8D0902     2180        STA  VKEYBD+1
905C A969       2190        LDA  #KEYUP&$FF
905E 8D1202     2200        STA  VTIMR2
9061 A991       2210        LDA  #KEYUP/$100
9063 8D1302     2220        STA  VTIMR2+1
9066 60         2230        RTS
                2240 ; KEYBOARD READ ROUTINE
9067 98         2250 INKEY  TYA
9068 48         2260        PHA
9069 8A         2270        TXA
906A 48         2280        PHA
906B AD09D2     2290        LDA  KBCODE
906E CDF202     2300        CMP  $2F2
9071 D005       2310        BNE  INKEY3
9073 ADF102     2320        LDA  $2F1
9076 D05B       2330        BNE  INKEY4
9078 AD09D2     2340 INKEY3 LDA  KBCODE
907B C99F       2350        CMP  #$9F
907D D00A       2360        BNE  INKEY1
907F ADFF02     2370        LDA  $2FF
9082 49FF       2380        EOR  #$FF
9084 8DFF02     2390        STA  $2FF
9087 B04A       2400        BCS  INKEY4
9089 8DFC02     2410 INKEY1 STA  $2FC
908C 8DF202     2420        STA  $2F2
                2430 ; STUFF MORSE BUFFER
908F AA         2440        TAX             USE CHAR AS INDEX
9090 BDFEFE     2450        LDA  ATASCI,X   GET ATASCI
9093 C91B       2460        CMP  #$1B       CHECK FOR ESCAPE
9095 D006       2470        BNE  INKEY8
9097 200690     2480        JSR  INIT
909A 4CCA90     2490        JMP  INKEY6
909D C97E       2500 INKEY8 CMP  #$7E       BACKSPACE?
909F D00D       2510        BNE  INKEY9     IF NOT CONTINUE
90A1 A5B6       2520        LDA  LAST       ELSE DELETE LAST CHAR
90A3 C900       2530        CMP  #$00
90A5 3023       2540        BMI  INKEY6     STACK UNDERFLOW?
90A7 E901       2550        SBC  #1
90A9 85B6       2560        STA  LAST
90AB 4CCA90     2570        JMP  INKEY6
90AE 20DE90     2580 INKEY9 JSR  PSHQ       PUSH ONTO QUEUE
90B1 D005       2590        BNE  INKEY5     QUEUE FULL?
90B3 A9FD       2600        LDA  #$FD       SQUAWK
90B5 20A4F6     2610        JSR  EOUTCH
90B8 A5BC       2620 INKEY5 LDA  BIT2
90BA 2410       2630        BIT  POKMSK
90BC D00C       2640        BNE  INKEY6
90BE A5B8       2650        LDA  BUSY
90C0 D008       2660        BNE  INKEY6
90C2 20E990     2670        JSR  PULQ
90C5 F003       2680        BEQ  INKEY6
90C7 20FD90     2690 INKEY7 JSR  CWOUT
90CA A903       2700 INKEY6 LDA  #3
90CC 8DF102     2710        STA  $2F1
90CF A900       2720        LDA  #0
90D1 854D       2730        STA  $4D
90D3 A930       2740 INKEY4 LDA  #$30
90D5 8D2B02     2750        STA  $22B
90D8 68         2760 INKEY2 PLA
90D9 AA         2770        TAX
90DA 68         2780        PLA
90DB A8         2790        TAY
90DC 68         2800        PLA             WAS SAVED BY IRQ HANDLER
90DD 40         2810        RTI
```

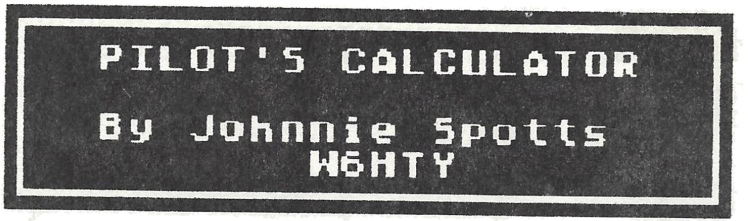
```
                2820 ; PUSH A ONTO FIFO STACK
90DE A4B6       2830 PSHQ   LDY  LAST       STACK FULL?
90E0 3006       2840        BMI  PSHQ2      QUIT IF FULL
90E2 A000       2850        LDY  #0         ELSE
90E4 91B6       2860        STA  (LAST),Y   STACK (A)
90E6 E6B6       2870        INC  LAST       ADJUST STACK PTR
90E8 60         2880 PSHQ2  RTS
                2890 ; PULL A FROM FIFO STACK
90E9 A4B4       2900 PULQ   LDY  FIRST      STACK EMPTY?
90EB C4B6       2910        CPY  LAST       EMPTY IF EQUAL
90ED 9007       2920        BCC  PULQ2      BRANCH IF NOT EMPTY
90EF 204590     2930        JSR  RESETQ     RESET STACK
90F2 A900       2940        LDA  #0         SET Z-FLAG
90F4 F006       2950        BEQ  PULQ3
90F6 A000       2960 PULQ2  LDY  #0
90F8 B1B4       2970        LDA  (FIRST),Y PULL BYTE INTO A
90FA E6B4       2980        INC  FIRST      ADJUST STACK PTR
90FC 60         2990 PULQ3  RTS
                3000 ; KEY MORSE CODE
90FD A6B8       3010 CWOUT  LDX  BUSY       STILL SENDING LETTER?
90FF D01C       3020        BNE  CWOUT3     BRANCH IF BUSY
9101 C6B8       3030        DEC  BUSY       SHOW BUSY AGAIN
9103 A209       3040        LDX  #9         MAX NUMBER OF BITS TO SEND
9105 86BB       3050        STX  COUNT
9107 297F       3060        AND  #$7F       ELSE SEND NEW LETTER
9109 AA         3070        TAX             USE ATASCI AS INDEX
910A BDA491     3080        LDA  TABLE,X    GET MORSE LETTER
910D 85BA       3090        STA  LETTER     SAVE FOR LATER USE
910F 1004       3100        BPL  CWOUT2     BRANCH IF NOT ERROR
9111 E6BA       3110        INC  LETTER     CLEAR ALL BITS FOR ERROR
9113 F008       3120        BEQ  CWOUT3
9115 06BA       3130 CWOUT2 ASL  LETTER     SHIFT BIT INTO CARRY
9117 C6BB       3140        DEC  COUNT      COUNT OFF BITS
9119 F00D       3150        BEQ  CWOUT4     QUIT IF ALL 8 BITS
911B 90F8       3160        BCC  CWOUT2     LOOP UNTIL START BIT
911D 06BA       3170 CWOUT3 ASL  LETTER     CONTINUE SHIFTING
911F C6BB       3180        DEC  COUNT
9121 F005       3190        BEQ  CWOUT4     QUIT IF DONE
9123 900A       3200        BCC  DOT
9125 B010       3210        BCS  DASH
9127 60         3220        RTS
9128 A900       3230 CWOUT4 LDA  #0
912A 85B8       3240        STA  BUSY       MORSE LETTER ALL SENT
912C 4C4491     3250        JMP  UNDASH     SEND FOLLOW-ON SPACE
                3260 ; SEND DOT
912F 205C91     3270 DOT    JSR  KEYDOWN
9132 A5B1       3280        LDA  DOTSPEED
9134 4C4691     3290        JMP  TIMEOUT
                3300 ; SEND DASH
9137 205C91     3310 DASH   JSR  KEYDOWN
913A A5B2       3320        LDA  DASHSPEED
913C 4C4691     3330        JMP  TIMEOUT
                3340 ; SEND DOT SPACE
913F A5B1       3350 UNDOT  LDA  DOTSPEED
9141 4C4691     3360        JMP  TIMEOUT
                3370 ; SEND DASH SPACE
9144 A5B2       3380 UNDASH LDA  DASHSPEED
                3390 ; SET UP POKEY 2 INTERRUPT TIMER
9146 8D02D2     3400 TIMEOUT STA AUDF+2     STORE DURATIONN
9149 A910       3410        LDA  #$10       USE 16-BIT TIMER @ 64KHZ
914B 8D08D2     3420        STA  AUDCTL
914E A510       3430        LDA  POKMSK     ENABLE POKEY IRQ
9150 0902       3440        ORA  #$02
9152 8510       3450        STA  POKMSK
9154 8D0ED2     3460        STA  IRQEN
9157 58         3470        CLI             ENABLE 6502 IRQ
9158 8D09D2     3480        STA  STIMER     START POKEY TIMER
915B 60         3490        RTS             RETURN WHILE TIMER COUNTS DOW
```

```
                3500 ; TURN MORSE KEYER ON
915C A5B3       3510 KEYDOWN LDA PITCH
915E 8D04D2     3520         STA  AUDF+4
9161 A9A8       3530         LDA  #$A8
9163 8D05D2     3540         STA  AUDC+4
9166 85B9       3550         STA  SOUND
9168 60         3560         RTS
                3570 ; TURN KEYER OFF (VIA IRQ)
9169 98         3580 KEYUP   TYA              SAVE REGS
916A 48         3590         PHA
916B 8A         3600         TXA
916C 48         3610         PHA
916D A900       3620         LDA  #0
916F 8D04D2     3630         STA  AUDF+4
9172 8D05D2     3640         STA  AUDC+4
9175 A510       3650         LDA  POKMSK      DISABLE POKEY2 IRQ
9177 29FD       3660         AND  #$FD
9179 8510       3670         STA  POKMSK
917B 8D0ED2     3680         STA  IRQEN
917E A5B9       3690         LDA  SOUND       IS KEY DOWN?
9180 F00A       3700         BEQ  KEYUP2      IF SO, SEND LETTER SPACE
9182 A900       3710         LDA  #0          SHOW KEY IS UP
9184 85B9       3720         STA  SOUND
9186 203F91     3730         JSR  UNDOT
9189 4C9E91     3740         JMP  KEYUP4
918C A5B8       3750 KEYUP2  LDA  BUSY        IS LETTER FINISHED?
918E F006       3760         BEQ  KEYUP3      IF NOT, QUIT
9190 20FD90     3770         JSR  CWOUT       ELSE KEEP SENDING
9193 4C9E91     3780         JMP  KEYUP4
9196 20E990     3790 KEYUP3  JSR  PULQ        ELSE GET NEW LETTER
9199 F003       3800         BEQ  KEYUP4      BRANCH IF FIFO EMPTY
919B 20FD90     3810 KEYUP8  JSR  CWOUT
919E 68         3820 KEYUP4  PLA              RESTORE REGS
919F AA         3830         TAX
91A0 68         3840         PLA
91A1 A8         3850         TAY
91A2 68         3860         PLA              WAS SAVED BY IRQ HANDLER
91A3 40         3870         RTI
                3880 ; MORSE CODE TABLE
91A4 01         3890 TABLE   .BYTE 1,1,1,1,1,1,1,1 00-07
91A5 01
91A6 01
91A7 01
91A8 01
91A9 01
91AA 01
91AB 01
91AC 01         3900         .BYTE 1,1,1,1,1,1,1,1 08-0F
91AD 01
91AE 01
91AF 01
91B0 01
91B1 01
91B2 01
91B3 01
91B4 01         3910         .BYTE 1,1,1,1,1,1,1,1 10-17
91B5 01
91B6 01
91B7 01
91B8 01
91B9 01
91BA 01
91BB 01
91BC 01         3920         .BYTE 1,1,1,1,1,1,1,1 18-1F
91BD 01
91BE 01
91BF 01
91C0 01
```

```
91C1 01
91C2 01
91C3 01
91C4 01      3930          .BYTE 1,1,1,1,1,1,1,1 20-27
91C5 01
91C6 01
91C7 01
91C8 01
91C9 01
91CA 01
91CB 01
91CC 01      3940          .BYTE 1,1,$2A,$28,$73,$36,$55,$32 28-2F
91CD 01
91CE 2A
91CF 28
91D0 73
91D1 36
91D2 55
91D3 32
91D4 3F      3950          .BYTE $3F,$2F,$27,$23,$21,$20,$30,$38 30-37
91D5 2F
91D6 27
91D7 23
91D8 21
91D9 20
91DA 30
91DB 38
91DC 3C      3960          .BYTE $3C,$3E,1,$31,$FF,$45,$4C,$4C 38-3F
91DD 3E
91DE 01
91DF 31
91E0 FF
91E1 45
91E2 4C
91E3 4C
91E4 01      3970          .BYTE 1,$05,$18,$1A,$0C,$02,$12,$0E 40-47
91E5 05
91E6 18
91E7 1A
91E8 0C
91E9 02
91EA 12
91EB 0E
91EC 10      3980          .BYTE $10,$04,$17,$0D,$14,$07,$06,$0F 48-4F
91ED 04
91EE 17
91EF 0D
91F0 14
91F1 07
91F2 06
91F3 0F
91F4 16      3990          .BYTE $16,$1D,$0A,$08,$03,$09,$11,$0B 50-57
91F5 1D
91F6 0A
91F7 08
91F8 03
91F9 09
91FA 11
91FB 0B
91FC 19      4000          .BYTE $19,$1B,$1C,1,1,1,1,1 58-5F
91FD 1B
91FE 1C
91FF 01
9200 01
9201 01
9202 01
9203 01
9204 01      4010          .BYTE 1,$05,$18,$1A,$0C,$02,$12,$0E 60-67
```

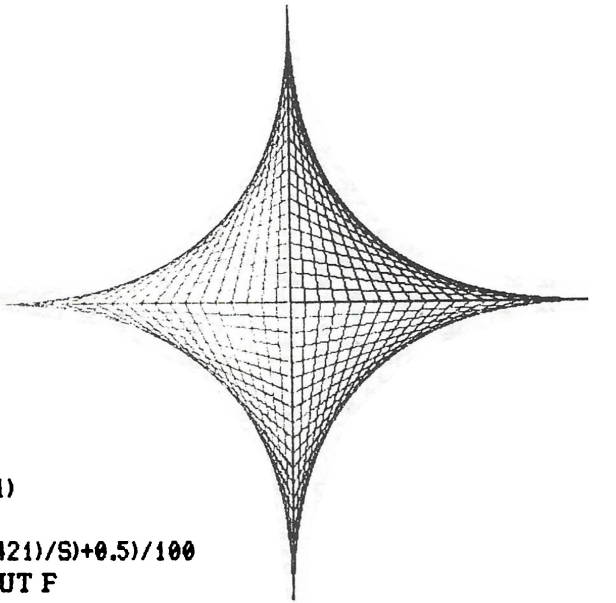
```
9205 05
9206 18
9207 1A
9208 0C
9209 02
920A 12
920B 0E
920C 10       4020          .BYTE $10,$04,$17,$0D,$14,$07,$06,$0F 68-6F
920D 04
920E 17
920F 0D
9210 14
9211 07
9212 06
9213 0F
9214 16       4030          .BYTE $16,$1D,$0A,$08,$03,$09,$11,$0B 70-77
9215 1D
9216 0A
9217 08
9218 03
9219 09
921A 11
921B 0B
921C 19       4040          .BYTE $19,$1B,$1C,1,1,1,1,1 78-7F
921D 1B
921E 1C
921F 01
9220 01
9221 01
9222 01
9223 01
9224          4050          .END
```






```
1 REM Pilot's Calculator adapted by
2 REM Johnnie Spotts, W6HTY, from
3 REM the Bearing/Distance program as
4 REM presented in Vol. 1, # 3 of
5 REM AD ASTRA...
6 REM by Earl Glines, KC7DG
7 REM
8 REM
9 REM
10 REM DIRECTION FINDING PROGRAM. FORMULAS FROM ARRL ANTENA  BOOK
20 DIM A$(10)
21 DIM S$(10)
22 DIM F$(5)
30 GRAPHICS 0
90 PRINT "ENTER THE FOLLOWING;":PRINT
100 PRINT "  YOUR LATITUDE";:INPUT A1
110 PRINT " YOUR LONGITUDE";:INPUT L1
130 PRINT " DESTINATION LATITUDE";:INPUT A2
140 IF A2=0 THEN A2=90
150 PRINT "DESTINATION LONGITUDE";:INPUT L2
170 R=57.2958:A1=A1/R:A2=A2/R:L1=L1/R:L2=L2/R:REM CONVERT TO RADIANS
175 L=L1-L2:IF L=0 THEN GOTO 500:REM LONGITUDES THE SAME
```

```
177 IF L>3.14159 THEN L=L-6.28318
178 IF L<-3.14159 THEN L=L+6.28318
180 T=COS(L)*(COS(A2)/SIN(A2)):T=ATN(T)
200 C=((COS(L)/SIN(L))*COS(A1+T))/SIN(T):C=ATN(1/C)
210 C=C*R:L=L*R:REM CONVERT TO DEGREES
220 IF L>0 AND C<0 THEN C=C+180
230 IF L<0 AND C>0 THEN C=C+180
240 IF L<0 AND C<0 THEN C=C+360
245 C=INT(C+0.5)
250 PRINT :PRINT "CLOCKWISE BEARING FROM NORTH IS  ";C
260 D=(SIN(A1)*SIN(A2))+(COS(A1)*COS(A2)*COS(L/R))
265 D=SQR(1-(D*D))/D:REM CONVERT COS TO TAN
270 IF L1=L2 THEN GOTO 600
280 D=ATN(D)
285 D=D*R:IF D<0 AND D>-90 THEN D=D+180
290 D=D*69.048:REM CONVERT DEG TO MILES
300 PRINT :PRINT "STATUTE MILE DISTANCE IS ";INT(D+0.5)
305 PRINT :PRINT "KILOMETER DISTANCE IS ";INT(D*1.6098)
306 PRINT :PRINT "NAUTICAL MILE DISTANCE IS ";INT(D*0.868421)
307 PRINT :PRINT "FOR HOURS ENTER G/S ";:INPUT S
308 PRINT :PRINT "HOURS IN FLIGHT ARE ";INT(100*(INT(D*0.868421)/S)+0.5)/100
309 PRINT :PRINT "FOR FUEL REQUIRED ENTER FUEL FLOW";:INPUT F
310 PRINT :PRINT "FUEL REQUIRED IS ";INT(INT(D*0.868421)/S*F+1500)
311 PRINT :PRINT "ANOTHER CALCULATION (Y/N)";
320 INPUT A$:IF A$(1,1)="Y" THEN GOTO 30
400 END
500 IF A1>A2 THEN C=180:GOTO 250
510 IF A1<A2 THEN C=0:GOTO 250
600 IF A1>A2 THEN D=A1-A2:GOTO 285
610 IF A1<A2 THEN D=A2-A1:GOTO 285
```



ACTIVE BANDPASS FILTERS FOR RTTY

by Paul Littlejohn, KE4DY

Operational Amplifiers, OP AMPS, have many useful applications in amateur radio. One such application is the BANDPASS FILTER which can be used for signal processing in RTTY modems. These simple circuits are easily designed and constructed, and provide significant improvement in selectivity as well as signal-to-noise ratio.

Refer to FIGURE 1 for the basic circuit schematic. This circuit uses one OP AMP and a few discrete passive components to form a one-stage 2-pole active bandpass filter.

There are two major advantages this circuit offers as compared to the standard "passive" filters: 1) inductors are not required, thereby decreasing the physical size and expense; and 2) passband GAIN may be acheived.

In order to design this circuit around a particular application, such as a demodulator filter for RTTY, the following filter parameters must be specified:

* Fo - Center Frequency
* A - Passband Gain
* BW - Filter Bandwidth

I have selected a MARK/SPACE FILTER as a design application. This application would be suitable in providing signal conditioning of the RTTY tones to reduce the effects of QRM and QSB on the HF bands.

To begin the design process, the first step is to select the center frequency of the filter. For this application, this would be 2125 Hertz for a single tone demodulator, or 2210 Hertz for a dual tone demodulator (such as the Exar 2211 chip). Let's pick 2200 Hertz.

The second step is to select the desired passband gain. Let's select a gain of 1. Although the Exar 2211 will operate with a wide range of input signal amplitude, I have found the best performance at lower amplitude.

The third step is to select the appropriate bandwidth. For our application, a 200 hertz bandwidth will be appropriate (for 170 Hertz shift).

The final step in the filter design process is to select a value of the two (2) capacitors in the circuit. I have arbitrarily picked .01uf as the choice, since it is readily available.

Now that these parameters have been selected, they may be entered into the appropriate equations to calculate the values of the components in FIGURE 1. The following program will enable you to enter the filter parameters, and will then calculate the values of R1, R2 and R3, completing the design process.

These filters may be cascaded to provide a better shape-factor and gain. The circuit shown in FIGURE 2 is a two-stage 4-pole active filter with the parameters we selected in the design example. This circuit may be used to precede an Exar 2211 RTTY demodulator to improve it's performance.

The filter tuning procedure is very simple: Inject a test-tone of 2210 Hertz at 100uV across the filter input. With an oscilloscope connected to the filter output, adjust R2 for maximum voltage, ensuring proper signal fidelity.

Component selection is not extremely critical. Although, for best results and minimum drift, metal-film resistors and good quality capacitors, such as mica or mylar should be used. Most any OP AMP may be used. Some readily available choices would include the LM 324, 4136 or 741.

Have fun experimenting! DE Paul, KE4DY

Editor's Note: We thank Paul for this very infomative article! It is not only a program, but a good tutorial on basic filter design! Let's see more from all of you!

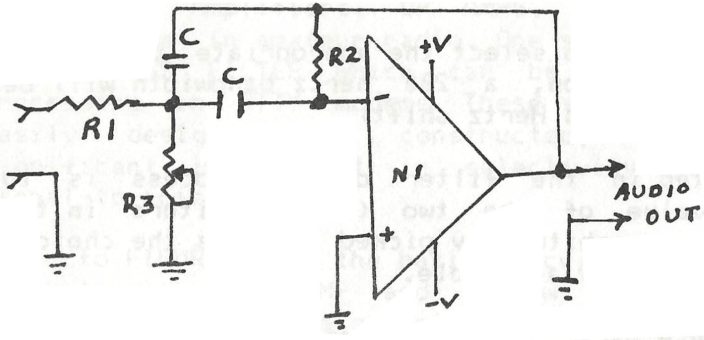


Fig. 1 Basic Bandpass Filter

R1, R3 1% Resistor, 1/4 watt
C Mica or mylar capacitor
R2 10-Turn Pot
N1 OP AMP, LM 324, F4136, 741, etc.

```
10 REM Active Bandpass Filter Design
20 REM by Paul Littlejohn, KE4DY
30 ? "}":REM (CLEAR SCREEN)
40 ? "ENTER PASSBAND GAIN"
50 INPUT A
60 ? "ENTER FREQUENCY"
70 INPUT F
80 ? "ENTER CAPACITANCE"
90 INPUT C
100 ? "ENTER BANDWIDTH"
110 INPUT B
120 Q=F/B
130 R2=1/((3.14)*B*C)
140 R1=R2/(2*A)
150 R3=R2/((4*Q*Q)-(2*A))
160 R1=INT(R1)
170 R2=INT(R2)
180 R3=INT(R3)
```

OP AMP = 4136

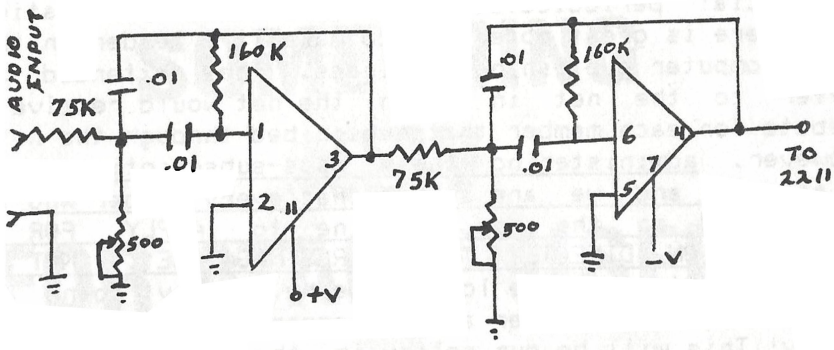


Fig. 2 Two-Stage Rtty Filter

```
190 ? "}":REM (CLEAR SCREEN)
200 ? "FILTER PARAMETERS"
210 ? "------------------"
220 ?
230 ? "FREQUENCY = ";F
240 ? "GAIN      = ";A
250 ? "FILTER Q  = ";Q
260 ? "BANDWIDTH = ";B
270 ? :? :?
280 ? "  FILTER VALUES  "
290 ? "------------------"
300 ?
310 ? "        R1 = ";R1
320 ? "        R2 = ";R2
330 ? "        R3 = ";R3
340 ? "C1 AND C2 = ";C
350 END
```

NOTICE TO MEMBERS!

"Hi Res Magazine" is the latest of the ATARI-only commercial periodicals. They have a slick publication and there is great potential to make it a leader in the microcomputer publishing business. They extended an offer to the net in which the net would receive a rebate for each member that subscribed through the net. However, administering these mass-subscriptions is difficult and we are asking that every member who is interested in the new magazine to APPLY FOR A SUBSCRIPTION DIRECTLY TO "HI RES MAGAZINE"... NOT TO THE NET!! Of course we loose some revenue by doing it this way, but neither are we responsible for anyone's money! This will be our policy in the future on all other magazine offers. The supplied form should be photocopied and returned with your subscription. Thank you.

ATARI MICRO-NET BBS!

We are proud to announce that as this issue of "Ad Astra..." reaches you, our new Bulletin Board Service is being instituted! The location of the BBS is at the QTH of Net Librarian, John Adams, KC5FW. John has installed (at great personal expense) a seperate line to be dedicated to the ATARI MICRO-NET BBS. Now you will be able to upload and download programs in BASIC or binary files, leave messages for the librarian or other net members and communicate with non-members who dial up the service. We are presently using a modified version of the AMIS BBS and it is very easy to use. Just follow the menu and you should have no problems.

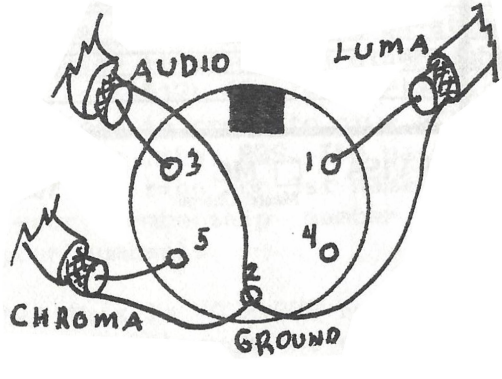
Call the BBS ONLY between the hours of 0400 - 1200 UTC as it will be off-line during un-attended hours and while the computer is at use in other jobs. The number for the BBS is: (512) 494-7476. Please limit calls to 15 minutes or less in order to give all net members a chance to access the BBS. The password to enter the system is your callsign (or 1st name if you are not a ham) and your membership number (Check your mailing label for your number).

Remember that this is YOUR BBS and that it exists for your benefit only through the graces of the librarian. Please don't abuse the system or cause delays in the system.

Commodore 1701 Monitor Meets the ATART 800
by Chuck Michaud, N1NA

While shopping for a color monitor recently, I came across the Commodore 1701 color monitor. I talked the salesmen into plugging the ATARI 800 into the composite video input of the monitor (with the Commodore-supplied cable) and it worked fine with no pin changes, etc. After getting the monitor back home and reading the manual, however, I decided to try the rear inputs of the monitor which accept seperate Luma and Chroma. WHAT A DIFFERENCE!!! Although the image using the composite video input was much better that a standard TV picture, seperate Luma and Chroma inputs make for the crispest, most vivid color rendition you have ever seen on your ATARI! The price for the 13 inch monitor (which has sound also) was only $250 at my local chain store... somewhat less than other monitor I have seen lately. To change the cable to use the rear higher-resolution NTSC inputs, simply make the following modification to the Commodore-supplied cable:

1. Remove the plastic cover from the 5-pin DIN plug.
2. Desolder the wire from pin-4 and resolder it to pin-1 of the DIN plug (Luma)
3. Add a third lead with an RCS phono plug on the other end to pin-5 of the DIN plug (Chroma), shield to pin-2 (Ground)
4. Button up your cable and get ready for the cleanest, sharpest image you have ever seen on your ATARI!



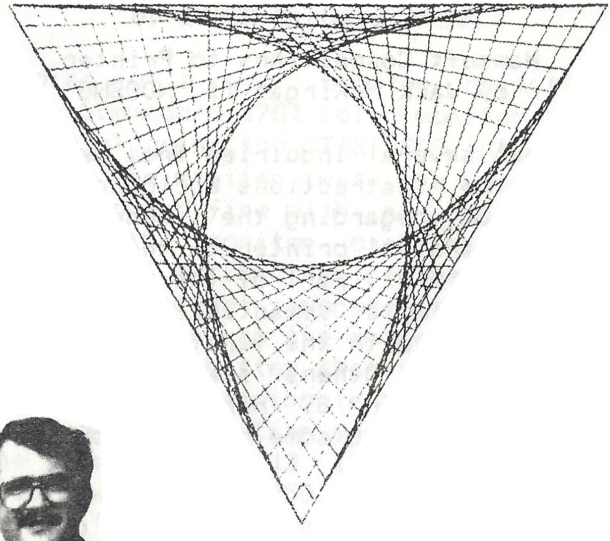
Hamsoft Connections to Printer
by Jack McKirgan II, WD8BNG

There have been several inquiries from members who are confused by the instructions enclosed in Kantronic's "HAMSOFT" program, regarding the connections required to interface a parallel printer to the ATARI's PIA port "B" (Joyports 3 & 4). Part of the problem seems to be in the area of simple semantics! Some manufactures label data lines with the first one being DATA 0 and going through DATA 7. Others start with DATA 1 and continue through DATA 8. Hopefully, the information below will put an end to some of the problems that have been experienced.

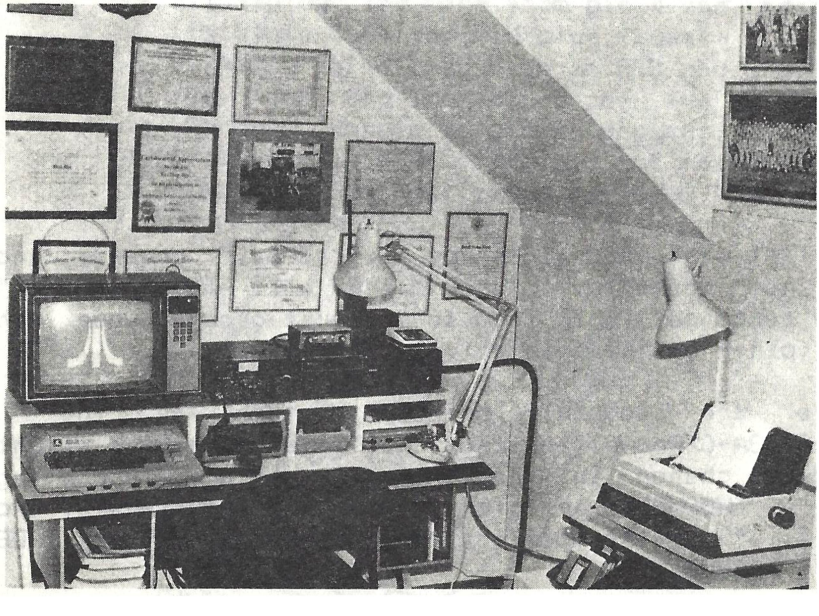
36-Pin Printer Connector	ATARI (port) Pin #
2	(3) 1
3	(3) 2
4	(3) 3
5	(3) 4
6	(4) 1
7	(4) 2
8	(4) 3
9	(4) 8
1	(4) 4
10	(4) 6
19-29 (only a few)	(4) 8

The last mentioned wires are twisted-pair grounds and are not necessary to ground them all. Also, "HAMSOFT" only sends out 7-bit info so you must ground your 8th bit (pin-9 of the printer).

There are several printers, such as the NEC-8023A-C/Prowriter that will need to have a slight hardware change in the printer. We are reprinting Andy's (WD9MBK) article from an earlier issue of "Ad Astra..." for the modifications needed. Good luck! DE Jack, WD8BNG



Brad Dye, WB4JCF
and his station!



NOTES FROM THE NET

From WB9TJD... Eastern House's "Monkey Wrench I" programmer's aid can be upgraded by the company for $22.50 after you send the original cartridge to the manufacturer.

ATARI's 48K expansion for the '400 is now running at only $110, which includes installation at your nearest service center.

Al, WA2NSM, reported that he had trouble with the spacebar switch in his '800 and that instead of replacing the keyboard, he bought a micro-switch with a plunger action that he mounted under the spacebar. (This is often necessary if the youngsters in your household are zapping the invaders during a hot session of "DEFENDER"!!). At any rate, the spacebar as well as a lot of cash can be saved.

Lee, operating from Mel's (WD5CAE) station, informs us that there have been some problems associated with some of the Gemini 10 printers. Lee tells us that Star Micronics will replace the original ROM if you have one of the defective units. You will have to call Star Micronics. Be sure to have the model number of your printer as well as the serial number so they can determine if you have one with the defective ROM.

Randy, WB4BZX, is happy to announce that the printer drivers for most popular printers is now available from APX for use with the "ATARI WRITER" word processor. By the way, this is one of the highest-rated word processors for a microcomputer!

Stace, KE0F, is deeply involved in developing DOS systems for the ATARI computers. One of his latest efforts is v-DOS, available from Starship Enterprises. v-DOS allows the user with a "MACE" 64K mod to an ATARI 400 or 800 (See the '400 mod in the last issue of "Ad Astra...") to use the "extra" 16K of RAM as a virtual disk to hold DOS.SYS, DUP.SYS, and MEM.SAV. This means that you can instantly go to the DOS utility package and then back to the existing program without having to reload the program. Stace also has written a similar

package that is marketed by Mosaic for use with their "RAM-SELECT" 64K boards.

John, WB6WIW, reports that all Rana 1000 disk drives are being shipped as single-density units rather than the double density that they promised at the beginning of their ad campaigns. When the double-density capability is available, it will be made at no charge for registered owners. However, it will be necessary to return your drive to Rana for the mod. It should be compatable with ATARI's DOS 3 (purportedly the reason for the delay is to insure compatability). Unhappily, John reports that a DD DOS from Rana will not be supplied with the drive, but when it is available, it will cost the recipient $49.95!!!

Charlie, W4MDY, reports that MPP now has a new printer interface to replace the '850. This one is called the MPP-1150 and does not require a ROM change as did the MPP-1100. Also, the MPP-1150 uses the complex serial port of the ATARI, rather than tying up the PIA port "B" as did the older model. It appears that this would be a perfect replacement for the hard-to-get '850, but it is unknown at this time is the unit contains an RS-232 port.

Speaking of the '850, Richard, N9BU, says that the '850 is available along with the '830 modem and Telelink program as a complete package for only $149.95 at your friendly SEARS stores! A super deal and one that is well timed since we are implementing our bulletin-board system!

From HQ comes news of a new ham-radio bulletin board! Known as UBIX, it is available after 8 pm Eastern time until 8 am Eastern time every day of the week. It is run by Universal Electronics in Reynoldsburg, Ohio and is completely menu driven, so you should have no problems. One thing to remember... the TAB key will return you to the preceeding menu. The number is (614) 866-4392.

'TARI CON '83 has been postponed due to problems in scheduling around around other shows. It seems that too many exhibitors would be at other shows unless the

conflict in dates was resolved. Rather than try to re-schedule for later this year, there will be a new date set for sometime next year. Too bad... they spent a lot of money on advertising!

WARNING DO NOT place your monitor on top of a shelf under which rests your disk drive! This can lead to loss of data transfer or a complete inability to read a disk. This does not only apply to color monitors with strong degausing circuits, the amps in a monochrome monitor can disrupt data transfer as well!

Stace, KE0F, tells us that the 810 Turbo is an excellent modification to the original ATARI disk drive! It gives you double density operation as well as the backup capabilities that were previously available with the "Happy 810 Enhancement". The mods are now being shipped, but the backup software will not be ready for a few weeks. It is shipped with OSS 2.0 and OSS 4.0, N-DOS (Stace's virtual disk patch which adds density-setting, density conversion, and write-verify toggle to DOS 2.0).

Bad news from Al, WA2NSM! Al says that an item known as a "Disk Doubler", which supposedly makes punching diskettes for use on both sides and easy chore, is pure junk!. Al says that the concept of the tool is excellent, but the construction of the tool makes a compass from a box of "Cracker Jacks" look like a precision instrument. The "Disk Doubler" broke after punching only about 5 diskettes and after repair it only lasted for about 10 more punches. Use a hole punch.... it's cheaper and will do thousands of floppies!

Our friends at Macrotronics have just announced a NEW terminal unit! Known as the RM-1000, it is marketed at the upper-end systems (ATARI, APPLE, TRS-80, IBM-PC). We don't know if it requires the TERMINALL software, or can be used with other programs. The new unit has LED bar-graph tuning indicators for mark and space and works in 170, 425 or 850 Hz shift. We'll try to keep you informed about the latest from one of the best! (Maybe we can also convince them to produce a version of their super software package for other TUs

(including our generic "Ad Astra..." interface!).

Speaking of Macrotronics, a couple of members report that the updated software package for the TERMINALL package seems to have eradicated the bugs that were present in the original program. All are well satisfied!
(Wouldn't it be nice if Kantronics would give us the follow-up support and upgrades for their software?! Too bad they are looking for the quick buck in the low-end systems like the VIC-20 and C-64!!)

QUICK RAM CHECK
from Randy T. Agee
WB4BZX

If you want to run a quick check on your RAM but dont have a fancy diagnostic try this little one liner:

```
10 PRINT FRE(0):GOSUB 10
```

Each time the loop is run the stack will decrement by 4 until an error 2 is encountered at the bottom of the stack (usually 2). "Holes" in the RAM may show up as decrements other than 4, system shutdown or an early error. For programmers who are concerned about a GOSUB with no RETURN the loop is correct! Be sure all memory robbing items like the disk drive & 850 are OFF when you boot the system.

CLASSIFIEDS!

TRADE PROGRAMS: I am interested in trading programs from my library which is in excess of 3,000 programs. Also have Happy Enhancement System. Please send your list and I'll reciprocate. Ronnie Antwiler, KB0MP, 513 Broad, Independence, MO 64050, (816) 836-3138

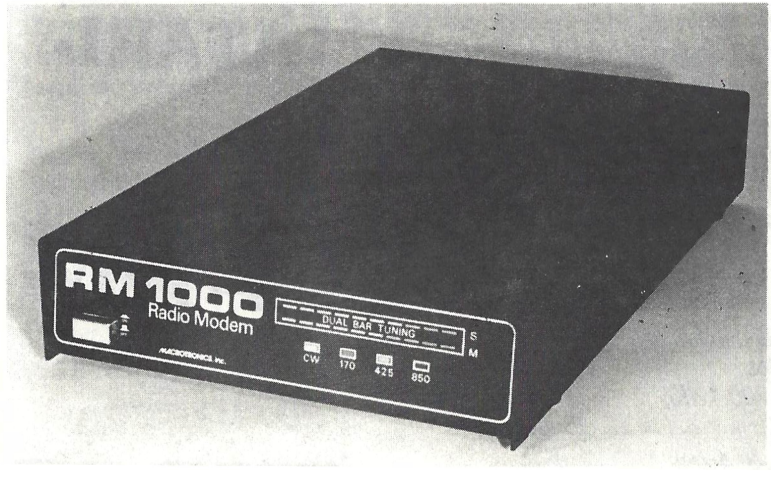
PROGRAM EXCHANGE: I would be interested in trading programs from my library. Please send your list and I will do likewise. Bill Zandrew, K9VPS, 631 Home, Oak Park, IL 60304

aspiring to head our publishing empire AND if you have the time and facilities AND if you have a little experience at such a venture, then give me a call! We'll talk it over! One other point... be sure that you have some assistance. That's a big problem here! I have no one to help out except during collating. That's one of the little drawbacks of living in the boondocks!

As you can see, I'm all for expanding the number of people required to administrate the net. When you have different people on different jobs, there may be some lack of coordination, but in the long run the net will be more effective and responsive to it's members. Think about it while you are enjoying (I hope) this latest issue of the journal! 73, DE Jack, WD8BNG

SORRY FOLKS!

There wasn't enough "juggling" room left in this issue of the journal for our review of the Macrotronics SCREEN PRINT program. I have already started the paste-up on the next issue and It will definitely be in that one. Intread, we present for your approval a photo... of the new Macrotronics RM-1000 RTTY Modem! We will have a review on this little gem as soon as it is available. The low price of this one and the high performance specs of the TU AND SOFTWARE!!!, mean that more and more ATARI owners are going to be going into RTTY with class! If there is room, I will paste in some of the features. A complete spec sheet will be in the next issue. Thanks, Macrotronics, for supporting the upper-end computer users and not going for the quick buck in the cheap systems. Jack, WD8BNG

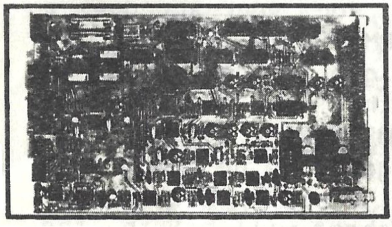


The RM 1000 is a modem which allows your microcomputer to send and receive Morse Code and RTTY over radio.

Unquestionably the finest radio interface available today at any price. Easy to connect. Easy to use. Very competitively priced. An unprecedented value!

Commercial quality hardware copies the weakest of signals. Unique Dual Bar Tuning™ affords instant, accurate tuning Morse and RTTY signals.

Thousands of satisfied customers can attest to the superiority of Macrotronics software. Easy to use. Error free. More features. Outstanding documentation.



SOFTWARE FEATURES

- *CW, Baudot, ASCII send/receive*
- *Multi level split screen with Review Window*
- *Four user definable WRU's (keyword auto response system)*
- *16 user defined messages are dynamically allocated & linkable*
- *Word wrap, diddles, auto unshift, UT4, auto ID, disk I/O and more!*

RM 1000 Radio Modem $239.00
Software and interface card/cables
Atari 400,800,1200, 600,800XL 59.00
TRS-80 1, 3, 4 and Apple II, II+, IIe 99.00
IBM PC, 40 and 80 column 149.00

HARDWARE FEATURES

- *Commercial quality demod filters.*
- *Crystal controlled AFSK tones.*
- *Dual Bar Tuning™-accurate & easy!*
- *110/220 AC power supply included.*
- *Shifts/Modes under keyboard control.*
- *Convenient rear panel connectors.*
- *15 Day money back trial period.*

IBM

•ATARI•

apple

TRS-80

SOME NOTES ON SOFTWARE COPYRIGHTS

from Randy T. Agee, WB4BZX

At a recent local user group meeting the subject of making copies of copyrighted software became the major topic. There seemed to be a great amount of disagreement and misunderstanding of software copyright laws.

I had been told all kinds of things concerning copyrights but none had ever been supported. After doing some research on my own I was able to assertain the following. To the best of my knowledge it is accurate and current.

In December of 1980 the United States Congress amended the copyright laws to permit the copyrighting of computer programs. Prior to this, legal copyrights weren't worth the paper they were printed on.

The amendment to the copyright laws authorizes you to make copies of a copyrighted program if you are the legal owner and need to do so in order to use the program properly, or for archival and backup purposes. The law also states that you may transfer (give, sell, lease, etc.) a copy of the program to someone else only if you transfer all of your copies and rights to the program. This means that you can't legally give a friend a copy of a copyrighted program and still keep a copy for yourself.

The question was also asked about a user group or school making copies of a program purchased by that group. Again, making a copy as outlined above is legal. But, this copy can only be legally used on the same computer the original is used on. If the copy (or copies) are used on another computer while the master is used or retained for use on still another computer you are in violation of copyright laws.

So, you can legally backup programs you have bought, sell those programs you bought and no longer want, and rent, lease or loan these programs to others provided all copies and rights go with them.

THE ATARI MICROCOMPUTER NETWORK

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